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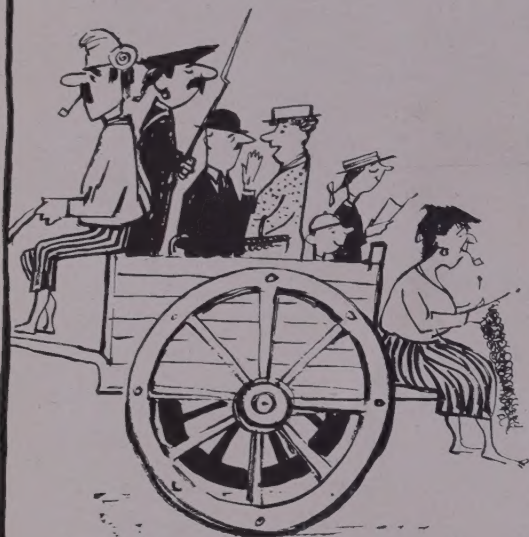
GEOGRAPHICAL MAGAZINE



Spring Number

THE OWL'S PLACE IN NATURE
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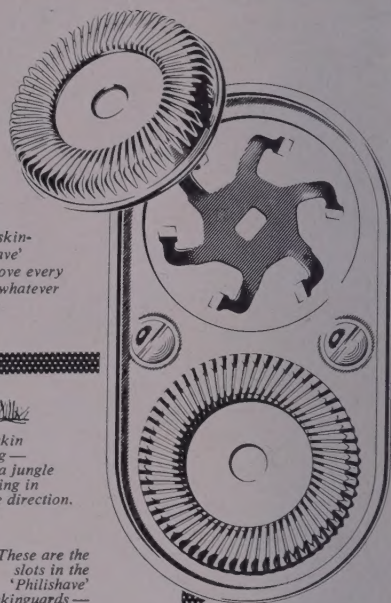
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Norway: Sea into Land

by WILLIAM SANSOM

The following article is extracted from Mr Sansom's latest book, The Icicle and the Sun, which will be published shortly by the Hogarth Press. The author describes it as "an impressionistic work, mounted on a factual framework", dealing with Norway, Sweden, Denmark and Finland; and one of its aims is to try to define the differences between these countries, too often vaguely lumped together in the noun "Scandinavia" or—with their own official sanction—the adjective "Nordic"

ALONG the granite waves of this enormously long thin country there are 2100 miles of sea-coast; or, if you measure it as the crab crawls, round each bay and along the coasts of each deep-cutting fjord, the figures may be re-arranged to make 12,000 miles of sea-bound land.

It seems as though the sea had set out deliberately to seduce the Norwegian from his intractable mountains by sending long arms of deep navigable water often as far as a hundred miles into the country—for the fjord is not only a gracious delight to the tourist and his poster, but a haven and highway for a mountain-trapped people.

The inland waves, the granite, are not barren: they are vested with vast and murmurous forests of birch and spruce, Norway's second natural wealth, and as lovely to the eye as to the timberman's axe; but outside the forest the lie of all this land is so precipitous that only 3 per cent of the earth is properly tillable, and even then the farms are often situated on slopes that preclude the easy use of agricultural machinery: cultivation is consequently very hard going.

One may think, as a figurative device, of Norway as being a giant long-armed lute, with Oslo set down at the base of the ellipse, and the upper arm rising fretted with mountains and ports and then stretching its string-keys round and over to the iron-mines of Kirkenes and the most northerly Russian border. The flight distance from Oslo to Kirkenes is over 900 miles: about as far as Oslo-Vienna. The real freight distance—for the railhead ends beneath Bodø and ships or the Swedish railway must be used—is far greater. Along the North Sea coast steeply rising to the Arctic there is a studding of centres—Stavanger, Bergen, Trondheim, Bodø, Tromsø, Vadsø and others—all separated by deep-cutting fjords and by mountains: all many ship-miles apart. Up and down this coast express steamers ply regularly, winter and summer. They must, for the sea is the true Norwegian highway. The railhead builds slowly north;

but slowly. There are airfields, there are roads. But distances are so great and the terrain so hard that the ship remains still the natural pack-beast of Norway.

Finally to emphasize the effect of a mountainous land, the famous example of the nation's second city, Bergen, must be cited. Until in 1909 the Oslo-Bergen railway was built it was simpler for the Bergenese, cupped by mountains, to sail to Scotland or England in two or three days than to the capital of their own country, then Christiania (Oslo), in five days.

These geographical facts must never be forgotten in any consideration of Norway and the Norwegian. More than anything else they must explain the athletic brio of the Norwegian. There is something weathery and bluff up here, a roll of gait, a lack of compromise in the eye, a rugged ability and almost a sharpness—both for laughter and for serious purpose.

One notices that, even on the city's streets, he walks faster than other people. One feels that, though he sits in a soft-furnished office in a soft city suit, he might be off up a mountain or aloft on the bridge of a ship in the next few minutes. He is the man who sailed his wooden broadships to Vineland (America) centuries before Columbus, who with a population a little over 3,300,000 maintains the third largest mercantile marine fleet in the world, and who not content with his Arctic-facing home fisheries must venture with ten floating whale-factories into Antarctic waters on the other side of the globe.

One may attempt perfidious simplifications—that these people are like the Swede crossed with the Dane, thoughtful gravity tempered with ease: certainly they are sudden to laugh, and quick to be serious. Or one might say that they approximate to the Celts of Scandinavia, westward-looking, who watch each night their Atlantic islands drowned in the last light of each day, who see the final plunge of the sun into another mythical world beyond, and whose mountain magic produced the

music of Grieg. But theories overlay the grain of truth that bears them. A people's character derives not from one or two but from multiple reasons. One may notice in Norway the prevalence of old-fashioned lace curtains, of the enormous cold-table breakfast of meat and fish, of the occasional incidence of a man in a straw hat—and from these one feels that here is still a strong flavour of the last century, that the will to change is sluggish: but the next moment one is considering some tower of a concrete and glass office-block, or a hydro-electric station dynamited into a granite mountain, or the extremely 20th-century manners of a people geared to the open air and athletics and committed to progressive institutions of cooperation and welfare and equalization. And then one must never forget that the Norwegian has the long dark night of winter, like his colleagues in these latitudes: and he has his share of the puritan pall that has so extensively sobered

the whole of the North, with the broad exception of urban Denmark: but he also has the sea-breeze to blow these away, and a jagged coastline and landline that seems to have kept him spirited beyond these two brakes, malevolent and benevolent, on the spirit. And he is, as I have suggested, brisk and energetic: yet careful to see that these virtues are kept proportionate—that his offices, for instance, are closed in summer by three or four in the afternoon.

It is the sea, too, which has finally won him his political independence. With so large a merchant fleet, there was a real reason to establish throughout the world Consulates to serve Norway's particular interests; and this was the occasion of the final break with the Swedish crown. In 1905, after more than five centuries of affiliation with first Denmark and then Sweden, the Royal house of Norway was restored. They guard this independence jealously. And joyfully—for of all these Scandinavian countries who love to fly flags, Norway is the happiest and most constant flag-flier of the lot. The white flagpole hits against the spruce forests with the same insistence as the slender upright birch—it is everywhere, a youthfully innocent-looking symbol of adult maturity.

But another and much older characteristic echoes stronger in Norway than elsewhere in Scandinavia—the presence of the Viking. The dragon-head glittering from the eaves is still falsified in romantic architecture; there are still several of the extraordinary wooden stave churches, built up from the principle of the long-boat house and with storeyed roofs of a pagoda tilt; and then there are the real Viking ships excavated near Oslo, tremendous projects of the shipwright's art and as beautiful as anything the Greeks contrived. Because of the presence of these beautiful and dangerous ships, and of the association in one's mind of the scarred and vented map and its fjords, and even of the spindrift echo of "Norge" in one's ears—the ships' ring of the Viking hammers louder here than elsewhere; though it is not obtrusive.

Viking means creek-man, and so let us contemplate this unique



A. J. Thornton



Widerø's Flyveselskab og Polar

Nord Fjord. "The mountainsides fall to the water like a series of diminishing curtains or theatrical scenic flats . . . The mountains close in horrendously"

*Hardanger Fjord. "The occasional waterside village with its white wood church
grey-spired . . . a human pinprick amongst the immensities of water and mountain"*

Det's Flyveselskab og Polarfly A/S



asset of the Norwegian coast—particularly the big creek, the fjord. What exactly is a fjord? I had always imagined, rightly enough, a deep inlet of sea-water, calmish, between mountains. But what I could never have conceived, and it is difficult to convey this in figures, is the extraordinary length of these waters. On and on and on they wind, ever deeper inland, snaking through arrested tempests of towering granite, like broad rivers spoiling for the source. The longest, Sogne Fjord, runs 125 miles inland. And the source itself, no true source but the cradle of an ancient glacier, makes for a deeply moving moment—moving through its very lapse of movement: for from far away on the ruffled sea your ship has sailed through such giant dimensions, such a weight of fir-soft granite to either side, past farms and pin-prick villages and forests and lovely landing-stages all part of the life on a waterway that seems to have tamed the roaring mountainsides—your ship has taken you through such a macrocosm that your journey must, after the reverberating miles, feel endless. Yet it happens—suddenly and gently it all ends in a sweet ellipse of green turf! Thence—no more water. It is such a sigh, this gentle green ending—the sigh of a Leviathan pleasantly expired in his bath: a sigh like the end of a symphony, when the brazen wind of wild music quite suddenly subsides in the breath of a remote, scarcely heard note from a single final violin, and that moment of silence, measurably part of the music, that follows. A hundred miles sounds a small figure to our road-roaring ears: but in these waters it is a very different quantity, it is immoderate, immense. The power of bad art is notorious; the well-used word fjord has a heathery calendar ring to it: do not believe this—like cities such as Venice, which has well survived its trial by water-colour, the original beauties of the fjord remain pristine.

Fjords differ. Sometimes, as with Nerøy Fjord, a branch of Sogne Fjord, the moun-



By courtesy of the Royal Norwegian

Nerøy Fjord. "Waterfalls like long marmoreal smears . . ."

tains close in horrendously. Then it is like sailing between walls of rock that will close in and crush, while the water beneath is terribly deep—you are in a rock-split magnified, and there is a melancholy unease, if not a terror, darkly to be enjoyed. Other fjords, like Salten above the Polar circle, meander through fields of Irish-bright green, the mountains lying gently back. Oslo's fjord, over sixty miles from the sea, is a gay un-

frowning water wide as a lake and dotted with the flagpoles and hutments of summer joy. Hardanger Fjord, approached from Bergen, is the idyll—coursing through mountains majestic but unterrific, and its lower banks white with apple-blossom in the month of May.

Like Nature, like other fjords, Hardanger Fjord has no regular dimensions. But as you plod along, your black-funnelled boat like a winter fly specked on the glassy magnitudes, there is an average breadth of water, something that feels like the Thames estuary at Greenwich—but here with a further dimension of green trees rising nearly sheer to either side, as high as the water is broad. This dark green fur of big trees is topped with a high frieze of purple and white mountain-tops that roll along like a rugging of some rich zebra-streaked hide, dazzling above the green. And below too, at eye-level, the calm green wall is daddled with the patchwork emerald and yellow of miniature farms. These, though, are never miniature to the farmer, who has to till on a steep slope, and to carry his burdens always up and down with only the help of a stocky mushroom-pink *fjordling* pony. To the alien English eye, these farms can look like long green golf-courses turned on their sides—there is a rise and fall of narrow fairways, a bunkering of humps, handkerchief greens, and the wooden homestead becomes a wooden club-house rattling with gin and lockers.

The weather may be blue and fair, the blossom-banks like fallen clouds. But the best days keep the clouds above, so that from time to time the sun can throw a theatrical shaft on the waters ahead and on the mountain slope. It is then that the truth flashes home—the quality of such scenery is, exactly, theatrical. Ahead, the mountainsides fall to the water like a series of diminishing curtains or lateral scenic flats—it is the deep 18th-century stage, measured *trompe-l'œil*, built on a magnificent scale with gigantic draperies lit by a modern search-light sun. A column of sunlight may prick suddenly on a distant white-and-black ship—in that instant, charmed with a golden radiance, the ship becomes an isolated dancer on a broad stage of gleaming water, its white deckwork frilled as a ballet dancer's skirt. Or a gull glides far up the green cliffs bright as white thistledown and rises and falls in immense flight, somehow more like a sound, an echo, than a bird. There is the stillness too of the theatre—as when heights of impassive stucco and cheese-cloth walls delineate the little move-

ments of the ballet beneath. The water is still, the mountains move only in the pattern the boat makes of them, and even the frequent waterfalls, like long marmoreal smears on the green, look motionless—until you draw opposite and these long white lines are seen after all to be alive, creepily moving within themselves like white-skinned worms, for one is too far away to see clearly the crystal grace of falling water.

At the reasonably unspeedy pace of these fjord ships—thus humbled by time as well as by the great spaces around—there is leisure to think. To be pleased at the old-fashioned black satin and starched cuffs of the white-capped waitress in charge of the saloon; to marvel at the occasional waterside village with its white wood church grey-spired among the huddle of coloured wooden houses; to wonder at such a human pinprick amongst the immensities of water stretching before and mountain rising above, as lonely and concerned as a duck's nest on a mountain mere. How, one idly wonders, does anyone choose to be thus locked away? What can anyone do—except sit stunned by the mountains on all sides? . . . But of course there are daily boats, and timber and other works, and roads hidden in the trees. Yet these villages look more isolated than a similarly small village *up* in the mountains—it is the effect of the mountain wall so sheer as a backcloth behind, and of the smooth sheet of water glassing like a stage beforehand: like a stage: theatrical.

Names of the Hardanger villages—Utne, Opedal, Lofthus and, a queen set magnificently at the end of its arm of water, Ulvik. Here again a white church among the June lilacs; and a stream and a woodmill; and one slight difference—a few gentle green hills to soften the steep and the purple mountains beyond. Sitting in the comfortable Brakenes Hotel you look straight along the fjord, down a corridor of water whose mountainsides again fall like receding scenic flats, and in the slow twilight the water turns as white as the ice streaking the distant peaks above, all then is white and purple, immensely beautiful, theatrical: and nothing moves, so there is a feeling that something momentous is just about to happen, something giant and placid and coldly exotic—as if round the purple mountainside there *might* come gliding a gigantic swan, its neck arched high as a hill, silent, huge, majestic and terrible. . . . But it doesn't and instead one turns away, moved and finally frustrated by loveliness of such magnitude, to face the moderate graces of a Franco-Norwegian dinner.

The Owl's Place in Nature

by H. N. SOUTHERN

This is a geographical success-story: of how many animals can it be said that they inhabit the whole earth, save for some oceanic islands and the Antarctic continent? It is also a story full of fascinating details about the peculiar senses and skills that owls have developed, especially for active life at night; details which are the fruit of long and close study by the author, who has been engaged for the past nineteen years in research at the Bureau of Animal Population, Oxford

To be a bird or beast of prey is to come into a rather secondary category of living things. Animals which live directly on plants are obviously more fundamental: animals that live on animals, whether by preying on them or by parasitizing them, are evolutionary frills, so to speak. Usually the different classes of animals contain some groups that are herbivorous and some, though fewer, which are carnivorous. On the whole the carnivores are the less abundant in numbers as well as in species and, as one traces the links in a food-chain running through an animal community, they decrease very rapidly. Let us make this clear by an example. The larvae and adults of insects which feed on vegetation may reach an abundance of many thousands per square metre of ground; small insectivorous birds which live on them may number about a pair per acre; finally the hawk which lives on the small birds may have to spread out at a density of only one pair per 100-200 acres. These three orders of density decline very abruptly, even if we allow for the differences in size. Their distributions take the form which Charles Elton has referred to as a 'pyramid' of numbers.

The owls come in the same position as the hawks, i.e. at the top of this pyramid of numbers, so that they cannot be expected to be very thick on the ground. Nevertheless there are some species of owls that are far more numerous than people would credit; doubtless some of this success they owe to specializing in living at night.

As a preliminary, let us consider briefly the adaptive radiation of owls—how, during their evolution, they have become fitted to most of the habitats and ways of life that the earth has to offer. In the first place the world's owls cover an astonishing range of size from the Snowy and Eagle owls, which stand some two feet in height, down to little fellows like the Pygmy and Scops owl with heights of only about six inches. This range of size indicates straight away that owls must have adapted

themselves to living upon prey of a wide variety of sizes.

Secondly, consider the multitude of habitats provided all over the earth—rain-forest, desert, tundra and all intermediate stages of luxuriance or barrenness; hardly one of these habitats is without owls. Some oceanic islands and the Antarctic continent are about the only areas destitute of owls. Looking at their wide adaptability in another way, we may note that the Barn owl (together with its related forms; the group is a very distinct one) is one of the most widespread species of bird upon the face of the earth, ranging from north temperate to south temperate zones and stretching right round all the continents with extensions to many islands.

Finally, think of the diverse types of food upon which owls of one kind and another live. On the whole they probably, as a group, kill more mammals and birds than anything else, ranging from tiny shrews to the smaller species of deer and hare, but there are also various species of owls which specialize on one or more of the following: fish, amphibia, lizards and snakes, moths, beetles, worms and so on. In fact, if all owls were suddenly removed from the world, the repercussions on other species of animals would certainly be incalculable, but equally certainly they would be vast.

These three considerations alone indicate the widespread success of the owls from an evolutionary point of view. It is a success, too, which has placed them on a pinnacle of adaptation by themselves, since no other predatory group of birds has achieved so thorough-going a nocturnal way of life. The hawks and falcons which hunt by day have a number of partial competitors; in England one can think at once of the whole of the crow family, several gulls, herons and bitterns and, in summer, even the Red-backed shrike. The owls have no bird competitors because they have so far outdistanced all other groups in the exaggerated development of vision and hearing to enable them to make a livelihood

at night. Even outside birds of prey only the nightjars have developed any parallel nocturnal hunting skill.

The specializations of the owl's senses of sight and hearing are among the more astonishing products of evolution and have received attention from zoologists and physiologists for many years. It is instructive to go out oneself into an oak-wood on a summer night and to imagine, even after one's eyes are completely dark-adapted (mine take about twenty minutes) just how one would locate that mouse rustling in the undergrowth by sight! Even after one has discussed the proportion of rods and cones in the owl's retina and the focal length of its lens (as we will do in a moment), I still have the feeling that a miracle is being performed under my nose; and this is, of course, a properly humble attitude with which a biologist should approach his subject.

First, then, let us examine the eye of an owl. It is extremely large for the size of the animal, being in fact, in a medium-sized owl, about the size of a human eye. This means that there is a large retina, the sensory 'screen' on which the image of the outside world is focussed; it also means a large aperture to the lens which can gather as much of the dim light as is available at night. Furthermore, the owl's eye is compressed from front to back compared with that of a man and the resulting shorter focus covers a greater field of view, and so again gathers more light.

Now for the business of the rods and cones. All vertebrates have these two kinds of light-receptors in their retinas, the rods being specialized to react to light-intensity, the cones to perceive form and colour. A number of rods may be linked together so that the stimuli they carry can be added together by the time they reach the optic nerve and the brain. Thus dim light is effectively 'brightened'. With the cones this cannot happen because the detail would be blurred.

Since the faint light which remains at twilight and after belongs mainly to the shorter wave-lengths, blue and blue-green (witness the speed with which any yellow or red object, e.g. a pillar box, turns black as night falls), we should expect owls to have little opportunity to appreciate colour. In fact, it is probable that most nocturnal animals live in a monochromatic world and are much more adept at perceiving any movement across their field of view (by noting the resulting changes in light intensity) than at forming a patterned image differentiated in terms of colour as well as of tone.

This does not mean that owls have no

cones at all; indeed they have plenty and perhaps in virtue of this can hunt by day if necessary or if they become secondarily adapted in that direction (as I will explain later). But the absolute size of an owl's eye enables it to have a relatively enormous number of rods and so to respond to the faintest possible illumination. Experiment has shown that the reaction of an owl's eye, judged by the contraction of the pupil, is almost entirely to blue and blue-green wave-lengths and tests of their capacity to detect visually and pick up dead mice indicate that very faint illumination (less than a millionth of a candle power!) can reveal prey to them.

Here, perhaps, I should point out that many mammals which are nocturnal get along not by having extra-sensitive eyes, as owls have, but by relying on other senses, such as smell and kinaesthetic sense. Such animals, exemplified by many carnivores like the fox and stoat, have 'poor eyesight' in the sense that their vision is monochromatic, but yet not counterbalanced by enhanced perception of light intensity. They make up for it by knowing their way intimately around their territories (kinaesthesia) and by relying much on hearing and smell. This means that they are not so much specialized for night activity as indifferent to whether it is night or day. I think, as a consequence, that foxes and badgers, like stoats and weasels, would forage quite a lot by day if they were not afraid of meeting civilized and destructive man.

All these considerations suggested to me, when I was making a special study of Tawny owls, that the use of a red light to watch them would go undetected. I had previously tried using an apparatus developed by the Germans during the war which converted invisible, infra-red rays into a visible fluorescent image, so that one was, in very fact, watching in the dark. However, though this was successful with rats, Tawny owls would have none of it because of the whine of the transformer. A car headlamp covered with a darkroom red filter was entirely successful and I have been able to sit with hide and binoculars throughout the night at many Tawny owls' nests watching the prey which the unsuspecting parents were bringing to their young, looking in the red light like the demon kings of pantomime.

So bright a flood of red light, however, makes it difficult to realize just how dim are the rays which the owls are using. The few occasions when the battery ran down during my watching were all the more impressive because visits to the nest continued as usual



Lynwood M. Chase, from *Frank*

The Great Horned owl is a north American species belonging to the genus of giants among owls, Bubo. The European and some African Eagle owls are even bigger than the Horned owl and can take prey up to the size of a small antelope. The high-speed flash photograph shows the third eyelid, or nictitating membrane, being drawn across the eye in order to protect it



The Snowy owl stands some two feet high and is feathered to line in the farthest north. The bird shown is a female; the plumage of the male is a much purer white. The Snowy owl can catch prey the size of Arctic hares but lives mainly on lemmings. Periodic 'crashes' in the populations of this prey cause large numbers of Snowy owls to migrate southwards well below their customary latitudes in search of new hunting-grounds.

Contrasting in size with the Snowy and Eagle owls is the little Elf owl from California, here seen carrying a scorpion for its young. Broadly speaking owls tend to fall into three size-groups—large, medium and small. The small, of which the Pygmy and the Scops are European examples, usually specialize on invertebrate prey such as beetles, moths and worms.

L. H. Jordan, from *Frank*





J. T. Hu

Some owls have a notable ability to vary their breeding habits according to the abundance of prey. In scarcity they may even omit breeding entirely for a year; if prey is plentiful they can increase the size of their clutches, or rear brood after brood. This Barn owl's family of five might well be increased to nine or ten in a year of extra abundance. The litter of castings shows that the family has accounted for a good toll of rats and mice

The Short-eared owl is a species found in open country—heather and grassy heathland—and so feeds primarily upon Short-tailed voles. Since the latter are notorious for violent fluctuations in numbers the Short-eared is one of the owls which can be most flexible in its breeding. The bird in this photograph has a very small family, indicating that the voles were at a low ebb and food had to be hunted over a wide area. When voles are abundant the territories covered by the owls can be comparatively small although the boundaries are just as fiercely, or more fiercely, contested

Ronald H. Hallam





Ed H. Hallam

The Long-eared owl belongs to a group which has the most exceptional development of asymmetry in the ears. Apart from this, the actual size of the ears of all owls is extravagantly large. These two characteristics suggest that such owls employ their ears both for pin-pointing the position of a rustling mouse and also for launching an attack on it. Certainly both the Long-eared and Short-eared owls do most of their hunting by quartering thick ground-vegetation, such as heather or long grass, in which ears might be a greater help than eyes. The Barn owl also hunts by this quartering method and it is known to have markedly asymmetrical ears, although the asymmetry is of quite a different type from that of the eared owls



H. A.

In contrast to the Long-eared owl the Tawny owl, photographed at the entrance to its nest in a hollow tree, probably locates its prey more by eye. Since its main hunting-grounds are in woodland, it is obvious that the quartering method would be difficult for it and so the Tawny owl prefers to watch from a perch and pounce. The illustration shows very clearly how owls can rotate their heads through a semicircle, thus making up for their inability to move their eyes. An owl's skull has been pared down to the utmost in order to accommodate the very large eyes, so that no room is left for any movement of the eyes independent of the skull. A Tawny owl weighs just under a pound but its eye is about the same size as that of a man



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Although the outstanding feature of the evolution of owls is their remarkable adaptation to moving and hunting by night, many owls have become secondarily diurnal or at any rate able to be active both by day and by night. Such a species is the Little owl, one which was introduced into the British Isles but which has nevertheless done well, no doubt because there was a vacant space in the animal community it joined—that for a small owl feeding on invertebrates. These include worms: the only other British owl which feeds on worms is the Tawny

in the near-darkness. This type of activity—path-finding around a familiar territory—is, of course, relatively easy compared with locating and catching mice and voles in the undergrowth of woodland at night. The efficiency of an eye that can enable the owner to do this must be exceedingly great and it is not surprising that an organ so sensitive needs careful protection from damage. Owls have relatively stout eyelids, which they can draw over their eyes (not all birds can) and they also have a more transparent third eyelid, or nictitating membrane, which is frequently used. It is not easy to see either happening, even with the help of a red light, but high-speed flash photographs reveal that every time a chick is fed the eyelids are closed over the eye to prevent accidental damage from an ill-directed grab by the chick at the food brought.

One interesting consequence of the great size of the owl's eyes is the lack of room for them to 'manoeuvre' and therefore the necessity to move the whole head to direct the gaze. Many people will have tried the experiment of walking round a tree which contains a roosting owl and watching the bird rotate its neck through 180° to keep the danger in view. There is also another very characteristic head-movement of owls when they are concentrating their gaze upon any object, and that is the way in which they move their heads up and down and from side to side. The exact function of this has not been investigated by experiment but, since the eye of an owl is specialized for detecting movement, it may be that stationary objects can be more accurately located if they are made to traverse the retina by movement of the head. One-eyed men and women judge distances much better if they or the objects they are watching are in movement.

But, even if we admit the extreme sensitivity of the owl's eye to dim light, a bird in dense woodland must be near the limit of useful visual perception on some nights. In fact the experiments of L. R. Dice have shown that summer nights with an overcast sky are approaching the threshold of illumination beneath which owls cannot even find dead prey provided in the simplified conditions of captivity.

Note that in Dice's experiments the owls were provided only with dead prey, so that they were restricted to visual cues. It seems certain that in natural conditions hearing also plays an important part in locating prey. Most owls have ears which are almost as exaggeratedly developed as their eyes: in the average small songbird the external aperture

of the ear is a tiny hole about as large as a match-head; owls, on the contrary, have a slit-like aperture which at its greatest development extends from top to bottom of the skull. Many species have a radical asymmetry in the structure of the ear; for instance, in the Long-eared owl each ear is divided into two compartments, one with an aperture leading to the inner ear, the other being blind. But, curiously, on one side of the head the blind compartment is above, on the other below the entrance to the ear.

It has been suggested by Professor Pumfrey that this odd structural arrangement may serve as a mechanism for pin-pointing the source of a sound, so that owls may be assisted in pouncing on the right spot to catch their prey by the directional cross-bearings which their ears provide. It is, perhaps, significant that some of the species which hunt over open ground have this asymmetry highly developed. Over such ground the owl must work systematically on the wing and, when the vegetation is dense and the prey lives its life in a maze of runways at root level, sight cannot be very helpful. This kind of hunting, which is characteristic of the Short-eared and Long-eared owls, must be guided mainly by sound. In woodland, however, hunting on the wing would be difficult and my own observations have suggested that the wood-haunting Tawny owl prefers to sit on a strategically sited perch and drop onto prey which it may have detected partly by eye.

In addition to this highly elaborated sensory equipment owls have also possessed themselves of the secret of silent flight, at least as far as human ears can judge. Presumably the fraying of the edges of the flight-feathers, which achieves this, must lose something in speed of flight, but this would be little disadvantage to an owl. I believe it is the very silence of the owls' flight which makes them dangerous on the occasions when they attack a man. Tawny owls have a specially bad reputation in this way and will sometimes swoop fiercely with their talons at the heads of people who approach their nest or young. The complete silence of the flight means that the first intimation of the attack is the air-wave pushed before it by the attacking bird and a man will automatically turn his head towards the danger before he can think and stop himself. Several people have in this way lost the sight of an eye. Being forewarned, I have always worn a wire-netting visor when climbing up to a Tawny owl's nest at night: even so I have several times nearly been knocked off the ladder by the violence of the unexpected and undetected attack.

All owls have the obliging habit of regurgitating the indigestible parts of their meals—fur, bones, feathers, hard parts of insects, bristles of worms and so on—in the form of pellets. Thus the naturalist who wants to know what owls eat has only to collect these pellets and analyse their contents. From long series of pellets more systematic observations can be made, which may detect variations in diet according to season, year, habitat and skill of the bird concerned: also some owls have favourite stations at which they produce their pellets and continuous collection at these stations will throw light on the total number of prey which an owl can consume over a stated period. This is obviously important in assessing the good which owls do in killing rats and mice and such other animals as conflict with man's economic interests.

This brings us to one of the most fascinating aspects of the owls' biology. The main thing that makes any animal a pest (humanly speaking) is the ability to multiply exceedingly at certain times and places. Some indeed—voles and lemmings—have a regular cycle of scarcity and abundance and the owls

which prey upon such cyclical species have to attempt to adjust their own numbers accordingly. In all animals which live on a fluctuating food-supply certain adaptations have been evolved to counter the temporary scarcities and to profit from the temporary abundances. Owls can modify their breeding behaviour according to the following scale as circumstances dictate. In times of great scarcity they can omit to breed at all; then they may lay their eggs and start to incubate, only to desert or chill them (probably because, if the male cannot find enough food for her, the hen must go off to feed herself); again, the eggs may be hatched but some of the young may die from starvation. The habit of beginning incubation with the laying of the first egg produces a brood of young differing greatly in size; since the largest and most active seize all the food they can, the smallest often dies and by this sacrifice perhaps danger to the whole brood is avoided.

The breeding habits of many owls are equally adaptable to conditions of opulence. The size of the clutch may be doubled at least (even the Tawny owl, which lays two and

All birds of prey regurgitate castings composed of the bones and fur of their prey. Here one Barn owl's casting is shown beside the dissected contents of another. Four of the skulls in the bottom row belong to mice and voles, which are economically undesirable to man; the fifth is a shrew's
A. Faulkner Taylor



only occasionally three eggs in England, may lay up to eight or ten during a vole plague on the Continent), all the young may be reared and two or three broods may be raised consecutively.

Naturally the species which show this plasticity of breeding habit most clearly are the ones which feed on prey which have violently oscillating population cycles, as mentioned above. The Snowy owl is known, especially in the New World, for the extensive wandering migrations it makes southwards, reaching down from its breeding grounds on the Canadian tundra right into the United States, when its normal food—the lemming—suddenly disappears.

On the Continent various species are linked with the ups and downs of the common vole, *Microtus arvalis*, but in Great Britain there is only one owl, the Short-eared, which shows in its most developed form this kind of opportunism. It is curious to reflect that the spread of young forestry plantations, encouraging at first a dense grass cover by excluding rabbits and other grazing animals, has nourished large vole populations within their protected boundaries. These have sometimes been large enough to cause serious damage to the young trees and the immigration and reproductive athleticism of Short-eared owls have been interesting to observe, though usually too delayed to save the trees.

The Short-eared owl is also a good example of how, when many species have equipped themselves for living by night, it may be worth the while of some to double back, as it were, and become diurnal again. At least we can say about the Short-eared owl, as about the Little owl, that it is almost as active by day as by night. Certainly in the higher latitudes it must be necessary for owls to have retained some faculty for operating by day because in high summer, when the breeding season is upon them and there are young to be fed, most of the twenty-four hours are sunlit. This applies specially to the Snowy owl which lives far enough up into the Arctic to be breeding in continuous daylight. Of course



H. N. Southern

A Tawny owl has time to look around before returning to brood chicks in the nest-box. A noise has made her concentrate her gaze and the characteristic side-to-side head-movement, which goes with such concentration, is shown at one extreme position

most owls can hunt by day, if need be. The Tawny owl is one of the most nocturnal of British owls but I have often found warm prey in its nest in the middle of the day which could not have been long killed.

Finally I would like to say this: quite apart from the unique place in Nature which the owls have secured by becoming the only whole-hearted group of nocturnal birds of prey, they have also a special aesthetic attraction because of their delicate and elaborate eyes and because they can, man-like, examine objects stereoscopically. I am sure that the nocturnal eyes of some mammals like the tarsier or the loris may be even more notable as light-gathering organs but these stealthy creatures, mammals and kin to man though they may be, cannot claim the fine, bold presence of an Eagle owl or a Snowy owl, nor the neat and miniature tidiness of the Elf or the Pygmy owl. Owls, I sometimes think, are almost persons.

Geography and the Documentary Film: Britain, since 1945

by BASIL WRIGHT

With the collaboration of Dr Manvell, Director of the British Film Academy, we are publishing a series of articles surveying the growth and present status of documentary films in the British Commonwealth and the United States and paying special regard to their geographical value. Pioneer in documentary development with John Grierson and others, Basil Wright has directed such famous films as Song of Ceylon, Night Mail (with Harry Watt) and World Without End (with Paul Rotha)

It is perhaps paradoxical that since 1945 the British Documentary Film has ranged more widely across the world, and has covered more varied subject-matter, than it did in its period of experiment (1929-39) or its period of consolidation and, indeed, of contribution to the national and international effort of World War II (1940-45). The paradox becomes all the more noticeable in that during the last ten years successive governments in this country have, for one reason or another, seen fit to abandon the system of public information by film which had been so laboriously built up and which had achieved such a considerable measure of success. This is not said with any intent of grinding political axes, but merely to explain that since 1946 the patterns of film-work in this field have become increasingly blurred, while at the same time the actual results on the screen have not in themselves been impaired.

In other words, the film-makers are still about their tasks—but the focal points of their efforts, so easy to find up to the end of World War II, are now dissipated over a wide and rather confused area. It might indeed be said that, from the geographical standpoint of portraying men in relation to their varied environments, the student of the documentary film can find no *point d'appui* other than in the Oil Companies, of whose enlightened sponsorship examples will be given later. Beyond that, he must go into a confused bazaar and pick out of it what bargains he can find.

At the beginning of the period under review governmental film-making was still at a high level. The late Humphrey Jennings followed his film on immediate post-war Germany, *A Defeated People*, with *The Cumberland Story* (1947), a film which dealt in human terms with problems of coal-mining. This film, made by the Central Office of

Information for the Ministry of Fuel and Power, is of notable geographical value in that it relates very closely the character of the men portrayed to their task of developing the natural resources of the earth and concentrates attention on a specific group of men working on a specific project: a coal-seam under the sea.

In the same year, also produced by the C.O.I. for the Ministry of Food, came Paul Rotha's *The World is Rich*—a magnificent sequel to his wartime *World of Plenty*. This film, with its imaginative approach to the fundamental problems and needs of people all over the world, stands at the opening of a period in which increasing attention has been paid not only to the Commonwealth and Colonial Empire, but also to the whole United Nations concept, in terms particularly of its specialized agencies and their work in under-developed countries.

It cannot be said that any coherent plan exists, or has existed, under which films on these subjects have been produced. The work has indeed been only too sporadic, only too *ad hoc*. Limitations of policy and of finance have seen to that. Only, perhaps, in the case of large organizations such as Shell can it be said that the films have been made to a long-term plan. The work of the Shell Film Unit—and indeed the considerable number of films made for other oil interests—will perhaps be seen, in the long run, to represent the most interesting development during the past ten or twelve years. For here the interests of the technologist and the engineer are seen to be identical with the interests of the governments of newly independent (and mostly under-developed) countries, and also with those of the U.N. agencies. For instance an expert medical team, however carefully trained, is quite useless if, miles into the jungle, its transport breaks down through bad maintenance or bad treatment.



British Film Academy and Roger Manvell Co

National and international sponsorship has led to the production of many fine British documentary films. (Above) *The Cumberland Story* (Humphrey Jennings) to break down old prejudices and promote new methods of mechanical mining. (Below) *UNESCO's World Without End* (Paul Rotha and Basil Wright) described the work of U.N.O.'s specialized agencies in Mexico and Thailand

National Film





Illustration by Peter Semadeni, 1938

Above: The Sardinian Project, sponsored by the oil industry, demonstrates the scientific manner in which malaria was eradicated throughout Sardinia. The man in the cart is suffering from an attack of malaria; the woman carries on working. Below: Daybreak in Udi, a British official film, tells how African villagers were induced to build their own maternity hospital despite reactionary opposition.

© 1948 Film Society and Royal Film Commission





During the 1958 Festival of Britain a number of films were sponsored showing the life and activities of the British people. Above: The Port of London Authority visited David Wright to make "Waters of Time," on the turn-round of shipping in a great industrial port. Below: In contrast, it was also presented in the film David in the form of a portrait by Paul Dickson of the life of a single millworker.



This lesson has been brought home very much to most documentary makers working at present time, and certainly to Paul Rotha who made working in Mexico and Thailand for the UNESCO film *What Was What* End in which he attempted in 35 minutes, to show the work of the specialised agencies of the United Nations, especially in the fields of health, education and education in kind, some miles apart. Perhaps the most noteworthy point about such a film as this is its official international sponsorship, with a carefully experienced maker, of documentary, to show their skill in the service of other parties within a documentary tradition. Its studied and interestingness for the small emergency of particular general films of this kind are of course what to the countries concerned, what it was in the case of *What Was What* End they have made themselves through the very medium of teamwork, they can learn a knowledge and understanding of real international problems in international co-operation.

These basic problems and needs of ordinary people all over the world have been the major preoccupation of the makers of these films sponsored by various authorities having a common international dimension in handling themes of widespread emergency concern. In *The Arabian Paper* made by Shell for Jack Chatterton in 1951 it was the elimination of malaria, in *Democracy* in 1952 made the same year by the C.I.O. for the Unesco office, it was the part played by America in a colonial system in the local development of science and education. Then there has been a whole series on the international campaign against the bomb, the laser or atom. Shell's *The Bomb*—the brilliantly mounted the life-story of this strange, and never home, that progress and unbreakable document of human achievement. After in the *Religion Problem*, made in Germany for the United Nations. This last-named film, shot in a really formal style, with virtually no use of sound-effect or music, deserves a wider recognition and showing than it received.

But, of course, the range of documentary is more extensive, far better known than the area of the described. Now it is shown easy to to the films have specific categories, let alone, is the few minutes more than a few of them, indeed, those mentioned are bound to have been selected according to my own preferences and prejudices.

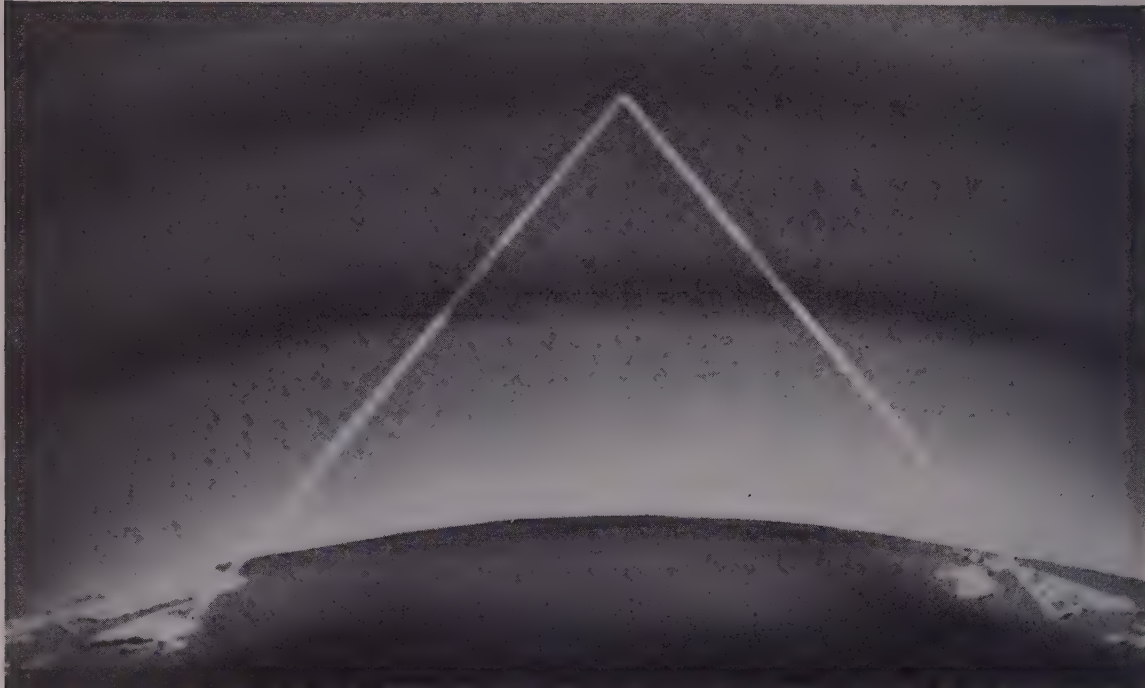
The theme of air-travel seems to me to have been a dominating factor during the past ten or twelve years. In 1925-26 John McCormack, for B.B.C. The *Seven* is doing in

which, by a stroke of genius, he devoted nearly all his footage to the countries over which his aeroplanes passed—Sudan, a desert country and *Chubb's* Leaven, India, Singapore, and Christmas Eve in Sydney. This remains a very fine film and something of a historical and geographical document.

On another level altogether is Shell's *Fastest Flight* (1954)—a history of aviation which must, among other things, be one of the most remarkable compilations of human and technical material ever assembled. And in 1955 Stuart Legg, producer of *Fastest Flight*, with director John Armstrong, turned out a colour film for Shell about international air transport carried now by the *Cloud* which judges the world with a breathtaking array of sequences which makes it seem both enormous and very small. This is a very striking film in the way it shows people of all races huddled-up in aeroplane cabins or in airport lounges, cut off from society and yet used for being disembodied, and yet still pathetically human. It is perhaps the first true description of air-travel from the passenger's point of view as well as from that of technology, method and organisation.

The two last-mentioned films are perhaps not strictly geographical teamwork as they portray travel divorced from particular environments. But Elmdge's film on Edinburgh, *Windy Days*, made in 1949 for the C.I.O. for the Scottish Home Department, while falling into the category of travel-film, represented a principle of which the importance has been emphasised in earlier articles in this series. After a wonderful opening sequence in which the Flying Scotsman is jostled across the Border country, it followed a little in order to tell two many human stories, yet in so doing it gave extremely the poet's-eye-view, the view that penetrates beneath the surface of the life and atmosphere of a community.

Then there have been the films of *Orkney*. The Festival of Britain in 1951 led to a small programme of films which included my own *Winds of Time* for the Port of London Authority, seeking to show the rich associations of tradition which gather round the workings of a great and ancient port. Paul Jackson's moving screen-topography of a fisherman, based on what a community's favourite character revealed through the detailed study of one man in that community (another man said for the geographical film), and above all *Family Portrait*, one that film mentioned by Jennings before a great audience in London depicted the contrast of the town and coast ports divisions. At first



By courtesy of the Educational Foundation for Visual Aids

Instructional and technical films are an important branch of British post-war documentary production. (Above) Mirror in the Sky was internationally sponsored. A radio beam is visually imagined as reflected from the Appleton layer of the Ionosphere. (Below) The World of Life series (Countryman Films) illustrates a lighter form of instructional film, commercially sponsored for cinema audiences

By courtesy of Countryman Films, Ltd



drawal from the use of film for information (and even exhortation) at home and overseas.

But looking a little more closely the picture becomes less blurred. After all, twenty years ago the conception behind the documentary film—not just as an art-form but as “a method of approach to public information”—was new, exciting, and to some people disturbing. Today these ideas are accepted. They are in general usage everywhere.

It is no longer a matter of surprise or comment that a large number of highly specialized films on medicine and surgery are in constant circulation and that new ones, mostly sponsored by enlightened manufacturers, are in equally constant production year by year. Educational, technological and training films are in a similar situation. No amazement is expressed today when the Educational Foundation for Visual Aids, as part of the Brussels Treaty, sponsors a film (*Mirror in the Sky*) about the basic significance of Appleton's work on the Ionosphere, for circulation throughout Europe in multilingual versions.

The oil interests are, as we have already seen, world-wide in their impact; in addition to the Shell output there are films made by the Iraq Petroleum Company and B.P. such as *The New Explorers* and *Distant Neighbours*. Both these films, by showing men from different races and environments working together for a common end in the search for oil and thus becoming interdependent, bring an imaginative approach to the explanation of the new technical *internationales*; and with this new conception comes, too, the training and establishment of new film-making centres in the Middle East, Asia and South America.

Moreover there are special occasions when private initiative and public needs unexpectedly coincide. A remarkable example of this was *El Dorado*, a film of great geographical interest and validity, with a musical score by Elizabeth Lutyens and a commentary of remarkable economy and pungency by James Cameron. In this film the layout, potentialities and problems of British Guiana were delineated with vivid images obtained from all areas of the country. All the material was obtained by John Alderson and Reg Hughes on a privately-financed expedition. Subsequently it was acquired by the Central Office of Information and edited by Terry Trench into a film of the highest value. It is a pity that the economics of film-making do not permit of more efforts of this sort.

Nor should it be forgotten that in Britain the nationalized industries use films. The Coal Board runs a regular screen-magazine

with a wide circulation, particularly in the Midlands and the North. The Transport Commission has a film unit, under Edgar Anstey, which has a large output of films ranging from railway technicalities through straight tourism to major works such as *The England of Elizabeth*, a vivid film-pageant in colour directed by John Taylor, with words by John Moore and a splendid score by Vaughan Williams—to say nothing of a breath-taking sequence of the choir of King's College Chapel. The geographical value of such a film may be small, but it cannot be gainsaid that if sponsorship based on tourism were to be used by enlightened film-makers in every country for the purpose of relating the national past to the national present with equal skill, their total contribution to international understanding would be enormous.

Similar considerations apply to entertainment films for children, in the production of which Britain during the past ten years or so has been a pioneer. This significant development, financed latterly by the Film Industry itself and carried into action by Mary Field, has been justly welcomed by educationists, cinema-managers, parents and, in particular and not unnaturally, by the thousands of children who flock to the Saturday morning shows in public cinemas. This bold experiment has already shown that there is an international demand for children's films, and a very ready reaction to them in most countries. One of the biggest successes has been *Bush Christmas*, a film made in Australia by Ralph Smart in 1946. Similarly, a film made in Indonesia (under the supervision of British technicians) has, under the title *Mardi and the Monkey*, been almost as successful. It is the story of a little Indonesian boy who loses his pet monkey; and though intended primarily for entertainment it brings intimately to life the relationship of such a boy to his parents and the community. (The same may be said of at least one British series of educational films, the delightful *La Famille Martin* films—surely much more than one of the best aids to the teaching of Senior French ever devised, with its warm human and ‘holiday’ atmosphere, its Gallic *ambiance*, and its natural and enjoyable acting by grown-ups and children alike.) Currently Kay Mander, who was concerned in both *La Famille Martin* and *Mardi and the Monkey*, is completing a story about a Canadian boy's visit to Scotland; a unit is making a colour-film about the adventures of an African boy, called *Toto and the Poachers*; and there are now plans for co-production with various Asian countries.

Finally, the present attitude of successive governments to the information services has not by any means meant a complete cessation of production through the Central Office of Information. This century's *Anna Karenina*—a film to be shot revolving round the encasement of Chisler Hall, has signalled new possibilities in revealing part at least of the resources of human energy in its peaceful uses. Such films, however, are strictly utilitarian. In a very rare case, even for government-sponsored films to refuse to act, was to the imaginative perception of the British people and their life. Neither do some use nor the support do the authorities seem concerned to do beyond the pedestrian limitations of daily record within which the films used in the B.B.C. documentary television programme, for example, are confined. Yet here and in the European link, through which the television services of a group of European nations had pool both live and filmed subjects originating in any one of them, there may well prove to be an opportunity of which both sponsors and film-makers will take better advantage in the future.

The real trouble lies in the fact that the

documentary film is in one sense in danger of reaching a point of no return. It is now established and, as I have said, accepted. It is a known genre of film-making. It is no longer an area of experiment, of the unknown. There are, let us face it, no Audens, Brittens and Goldsmiths working with the Griersons and Canaanites to produce new cinematic ideas, as happened in the days of *La Folie* and *Night Mail*. Documentary has made for itself a number of moulds, and these, properly handled, turn out the right sort of job. But the new moulds still await their creators, and it seems likely that the younger generation, or at least those of them who want to make something new in terms of cinema, are no longer interested in the documentary concept. A new slogan has appeared: that of "Free Cinema".

Free Cinema—which, let me add, I wholeheartedly welcome and have done my best to support—poses the following thesis: there must be an area of film-making in which the creative artist is not tied to the financial arrangements either of the film industry, the commercial studio, or the sponsor (government or industry).

La Famille Martin was an imaginative and interesting series of officially sponsored language-teaching films spoken in French and made by a French unit in France under Ray Mosnier's direction.





Momma Don't Allow, a study of young people in a London suburban dance-club, represents the so-called "Free Cinema". Using their own resources, or helped by the British Film Institute's experimental fund, young British film-makers are developing their own avant-garde forms of production.

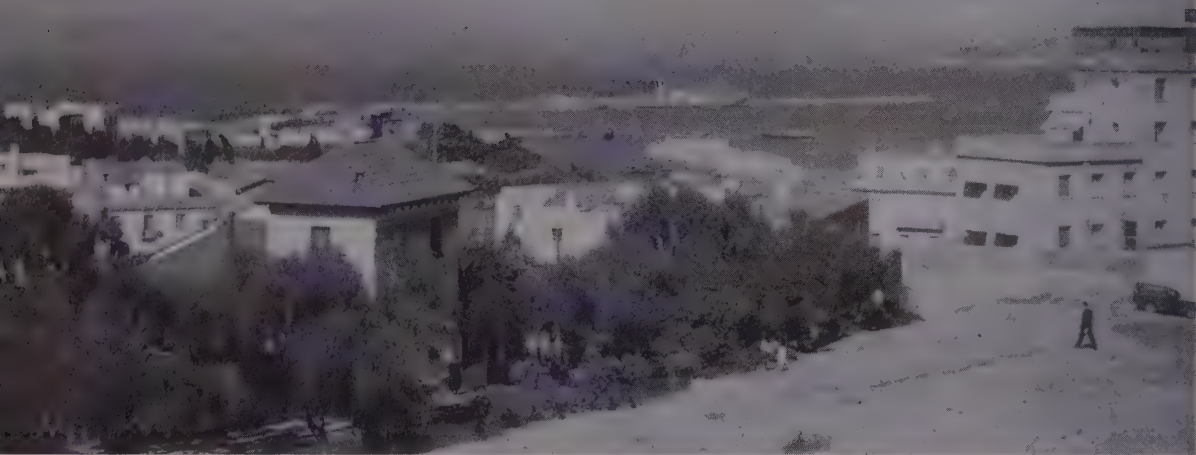
The films so far produced under this banner include Mazzetti's *Together*, a moving and lyrical description of the world of two deaf-mutes in an imagined but realistic East End; Lindsay Anderson's *Oh Dreamland*, a horrifyingly astringent report on fun-fairs; *Momma Don't Allow*, a sympathetic and rather jolly film about a London Jazz club; and *The Door in the Wall*, Glen Alvey's remarkable experiment in the use of an expanding and contracting screen. It is perhaps not unimportant to note that all of these films, bar one, were partly assisted in their production by the Film Industry itself—a point which should in no way be allowed to obscure the fact that no interference with the film-maker's intentions took place. All of them exemplify an extreme licence for the artist or poet, in contrast with the pedestrian limitations to which I have referred. None of them can be said to present an objective picture of British life or to have any direct geographical value. Yet in them may dwell the spirit of new creation and the notes that they sound may call forth harmonies attuned to the coming age in other lands. African counterparts of *Oh Dreamland* or *Momma Don't Allow*, made by young

Africans for young Africans, would be an exciting experiment in international interpretation: even more exciting would be their Russian or Chinese counterparts, if ever these could be made with equal freedom from the inhibitions of an older generation.

Would it be rash to prophesy that in this country, at least, the devotees of Free Cinema may well take over the area of creative experiment which was previously the happy hunting-ground of the documentary film-makers? But in the long run the tradition of the documentary film may win through: for this tradition has already proved the enormous and lasting value of the cinematic medium as a servant of common humanity. If this country does not produce the young men and women who will find new ways of saving old and fundamental truths within the documentary concept of public service, it is quite certain that their counterparts in Asia and Africa will soon do so. I for one hope that some at least of the leaders of Free Cinema, as well as of Documentary, will be there to help and, above all, to bring to birth new forms of filmic expression designed to increase the mutual understanding of mankind.

Tangier: International City

by MICHAEL CROWDER



All photographs by the author

(Above) *The proximity of the Spanish coast, here seen from Tangier, emphasizes that city's strategic position on the Strait of Gibraltar which is only eight miles wide at its narrowest point*

Narrow necks of land separating the seas and narrow waters joining them are geographical facts from which many problems arise. The problems of Suez will trouble us for a long time to come; the problems of Panama, as Professor Brogan showed in our February number, while largely in the past may yet be revived in the future. So may those of Tangier, which found temporary solution in the international regime that came to an end last October. Its curious local effects are here described

I WAS drinking mint-tea with a young Arab in one of the open cafés of the Petit Socco, which is more reminiscent of Montmartre than of Morocco. It was his first night in Tangier and he seemed bewildered by the cosmopolitan atmosphere of the small square. After a long silence he turned to me and said: "Tangier is utterly different from Rabat or Fez. Not even Casablanca is like this. I have never seen so many different people before." He pointed to an Indian locking up his shop for the night whilst his wife, in a purple sari, shooed away a beggar from the Rif hills; then to an old Spanish woman pestering an American and his Chinese friend to buy lottery tickets issued by some South American republic.

Earlier that evening a young Algerian guide, who spoke Spanish, French, German, Portuguese and English volubly if ungrammatically, had taken us to an "American shop" to buy a shirt for my Arab friend. We

were served by an elderly man who spoke French with an unmistakable Cockney accent. I asked him what part of London he came from.

"Stepney," he replied without surprise.

"Have you been here long?"

"Longer than I care to remember."

"You don't sound as though you like it."

"Could be worse. When you think of it Tangier is not much different from Piccadilly Circus on a Saturday night."

Tangier might well be called the Piccadilly Circus of Morocco: here the nations and languages of the world are spun into a lurid tartan; here is all the glamour of night-life, frowned on in the more puritan towns of Morocco; here rich and poor rub shoulders; here cats may look at kings, whilst the kings in their turn stare back.

But Piccadilly Circus is, despite its international atmosphere, essentially British, whilst Tangier, the "most beautiful city of the

"Maghrib" (the Arab West), is its least typical. Its violent fluctuations in character, from the Spain of Rue des Siaghines to the Paris Moderne of Boulevard Pasteur or the Arabia of the twisting alleys of the Kasbah, are in keeping with its bloodline. Tangier is a bastard city of uncertain parentage and an ancestry more illustrious and varied than that of any Royal House in Europe.

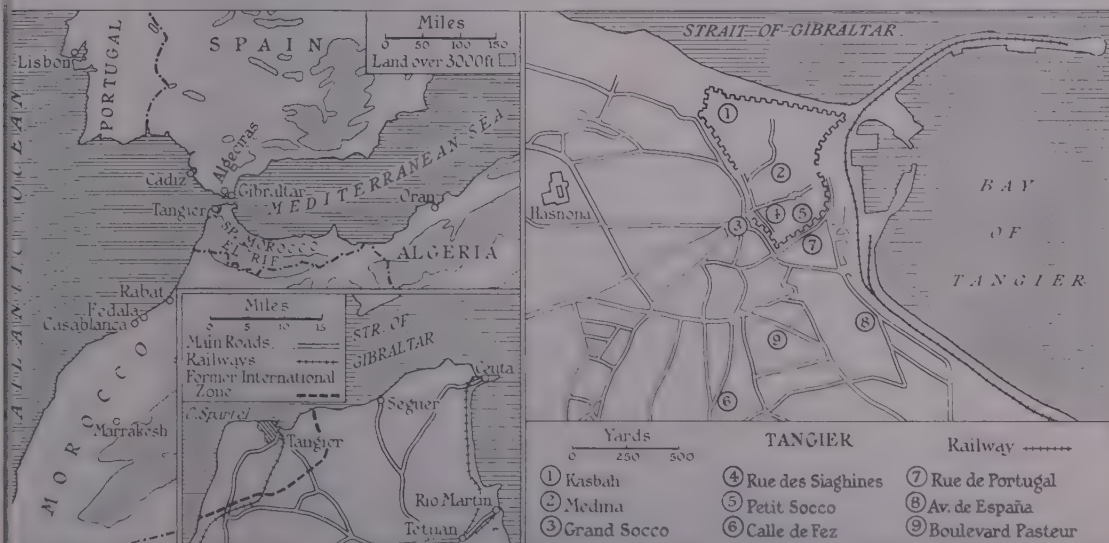
Tingis, which belonged in its early days to legend, is now preserved in the murky depths of Hercules Caves where some of the finest millstones in North Africa are made. Both the Phoenicians and Carthaginians occupied the town and in 38 B.C. the Romans elevated it to the rank of a Colony. The Vandals took it only to lose it to the Byzantine Empire, which in turn lost it to the Visigoths. In A.D. 682 Okba Ben Nafid captured it and for the first time it became a Moslem city. Its proximity to the Spanish coast made it the perfect bone of contention between the Omayyads of Spain and the Idris Dynasty of Fez.

It was alternately Spanish and Portuguese from 1471 to 1661 when it was given to Charles II as part of Catherine of Braganza's dowry. The English welcomed it as a port strategic to the suppression of Algerian and Moroccan pirates, but Samuel Pepys who visited it in 1680 with Lord Dartmouth was not impressed and recorded that it was "an ordinary place but overseen by the Moors so as to be amazed how the King has laid out all this money upon it." His brother-in-law Balty St Michel was more

violent in his opinions of Tangier, describing it as "a hellish Torred-zone . . . this hell of Brimston, and fire and Egipts Plaugues." Pepys's opinion was justified in 1684 when, despite the money spent on its fortifications, the Sultan Moulay Ismail took it for the Moors, in whose hands it remained for the next two centuries except for a brief period when the French bombarded and occupied it in 1844.

"One of the most ill-considered acts in history" was how Sir Harold Nicolson described Kaiser William II's entry into the city in 1905. Yet the direct result of this was the Algeiras Conference which mothered the International Government of Tangier that has just been brought to an end by the Conference held at Fedala last October.

Tangier was internationalized not because the city's character demanded it, but because its vital position at the mouth of the Mediterranean aroused the expansionist ambitions of the major powers of Europe. Each was determined that if it could not have the plum-cake all to itself it should be shared rather than go to a rival. As Nelson put it for his own country: "Tangier must always remain in the hands of a power like Morocco or else England must own it." Thus when Morocco was made a Protectorate, Tangier was not annexed. And, after World War I, it was Britain who prevented France or Spain from taking it. For, as *The Times* of May 25, 1923, observed: "The acquisition by a foreign power of sovereign rights over Tangier would cause not only grave prejudice to all British





The minaret (left) of the Kasbah Mosque, which dominates Tangier, is the most beautiful in the city. It stands next to the Sultan's Palace, from whose roof this photograph was taken. The central feature of the Palace, now a museum with an interesting collection of Roman coins and statuettes, is (opposite) its tiled courtyard with elegantly decorated ante-rooms leading off this



(Right) The Kasbah Mosque's minaret can even be seen from the dark little streets of the Medina. These wind with the irregularity and confusion of a skilfully constructed maze towards the Kasbah, or fortified city, which overlooks the harbour





The centre of Tangier's Bohemian life is the Petit Socco, or small market. This is a small square where people of every nationality pass the day gossiping, idling with rumours, talking politics or just waiting for something to happen as they sip their mint-tea, the favourite drink of the Arabs

commercial interests, but it would diminish the strategic value of a fortress and port "Gibraltar" which are the cornerstone of Empire."

Thus an International Committee of Control was formed from the eight signatories to the Algieras Conference: Great Britain, U.S.A., France, Spain, Portugal, Belgium, Holland and Italy. The Sultan of Morocco was represented by the Moudub who controlled the Moorish population and presided over the International Legislative Assembly. The Administrator of Tangier was appointed by and responsible to the Committee of Control. He had to be Belgian, Dutch or Portuguese.

I asked a local journalist, who was correspondent for a number of leading European and American papers, what he thought of Tangier's International Regime.

"It was a diplomatrocity. All the power was in the hands of the diplomatic representatives of the governing powers. They were a law unto themselves. A diplomat could do anything. I remember the time when a diplomat was driving along the

wrong side of the road and a policeman stopped him. Then he saw his consular badge . . . Nothing more was said."

"But I always thought sovereignty lay with the Sultan of Morocco."

"So it did. But there was little he could do if he himself was subject to French control. After all the Moudub, the Sultan's representative, had to do more or less what the French told him, or else his appointment, which was made in Rabat, would have been terminated."

"Over the last ten years", he continued, "the administration has been much more efficient. But the Arabs never liked it. They always felt that the International Administration was at the bottom of all their troubles. After all, poor people did not understand the regime's advantages. Its status as a free port, as a tax-free city could hardly be of interest to them. Naturally it was ideal for businessmen and bankers, who, whatever their race, were devoted to the regime."

The main trouble with Tangier's government was that it merely gave effect to the power which diplomats had already acquired



(Left) *The Rue des Siaghines, narrow and crowded, is one of the most famous streets in Tangier. It climbs from the Petit Socco to the Grand Socco; and its many money-changers and banks, clustering somewhat incongruously around the beautiful Spanish Church, vividly recall certain scenes from the New Testament*

(Right) *A first sight of the Grand Socco, the central market of Tangier, is pure Arabia, with the peasant women from the Rif hills selling vegetables and cut-flowers; the traditional water-sellers clanging their bells to attract thirsty shoppers; the sweet tang of the morocco leather on open stalls; and even, on market-day, a snake-charmer. But the illusion is soon dispelled by the ugly white office-blocks sandwiched between the old gateways to the market, and by the number of Spanish women dressed in uniform black, shopping with dowdy coloured baskets*



for themselves through capitulations granted by the Sultan of Morocco in the 18th and 19th centuries. The gift by one Sultan to the diplomats of an entire forest, together with exclusive hunting rights, was almost a caricature of the International Regime. Appropriately it was known as the Forêt Diplomatique. I hope the new Moroccan Administration will not change its name: for it will be a fitting memorial to the pig-sticking, exclusive characteristics of the regime. Responsibility was always to themselves or their governments, never to the Tangerines whom they ostensibly served. Even the so-called representatives of the people were appointed by their consular representatives so that it was never the *vox populi* that was actually heard in the assembly, but the voice of the interested powers.

Little wonder then that just before the end of the International Regime the *Tangier Gazette* lamented in an editorial: "We cannot blame the Moors. What has happened, what is happening, and what will happen to Tangier could have been avoided. The

mightiest nations in the world had Tangier under their tutelage . . . It was a wonderful opportunity. They could have made of Tangier a model of good government, which not only the rest of Morocco but the rest of the world would have been compelled to admire."

This did not happen, for the powers did not seem interested in making an enviable record for philanthropy, but only in preserving their own interests. Now, as a result of the Fedala Conference, the powers who used to be represented on the Committee of Control have finally agreed to the transference of the administration of Tangier to the Moroccan Government.

Most of the criticisms of the regime, and there are many, were justified. But it was not without its good points. Praise is due to the way it handled the complex population of the Zone. Tangier had all the ingredients of a first-class communal problem. Yet except for some anti-Semitic feeling which has recently manifested itself as a result of Cairo Radio's inflammatory broadcasts, there has never

The narrow, stepped streets of Tangier are one of the city's most charming features. This one, the dentists' quarter, clammers down to the harbour from the higher level of such roads as the fashionable Boulevard Pasteur. At its foot the walls of the old city rise sheer over the sea-front





(Above) The money-changers and (below) the peasants from the hills with their heavily laden donkeys are two of the most characteristic sights in Tangier. The former emphasize the role of Tangier as an international money-market ; while the latter proclaim the gulf between the city and its surroundings



been any serious trouble between the various communities. Far from being the city of danger so many have painted it, Tangier was one of the best behaved in the world. There were no troops in the Zone, and the police force numbered a mere 500. The Administration cost the city very little and its budgets were usually balanced, which was more than can be said for the Spanish and French zones of Morocco.

The International Administration was largely financed by the 13½ per cent duty levied on all goods entering the zone. In 1953, for example, the total revenue was 2,173,553,894 francs of which 1,364,173,901 was derived from customs. Economically the city depended on the fact that direct taxes imposed on citizens were negligible and on very easy conditions for the registration of companies. Indigenous products were limited to cork, fish and a few secondary manufactures. Its status as a free port, an international money-market and a tax-free city was Tangier's economic *raison d'être*, together with the liberal atmosphere of Tangier and its short list of punishable crimes which made it an ideal resort for those who came up against the laws of their own country. A substantial part of the city's income was contributed by such people and by the many tourists who were attracted by the reputation Tangier has gained at the hands of sensation-mongers. Often they were quite surprised to find that the city had superb hotels and one of the finest beaches in the world.

One thing is sure for the future. The new administration will have to follow closely in the footsteps of its predecessors. Any radical change in Tangier's status as an open port and a free money-market would be tantamount to suicide. How closely Tangier's economy is bound to its privileged status can be seen in the recent exodus of capital, which has been estimated as high as 50 per cent. For the return of this the Moroccan Government will have to show that it is no party to Nasser's political tactics. At a press conference when I was in Tangier, M. Balafirej, the Moroccan Foreign Minister, and Secretary-General of Istiqlal (one of the leading political parties of Morocco), was asked what assurances foreigners would have for the safety of any capital they invested in Tangier. After all, Nasser's nationalization of the Canal was hardly conducive to confident investment in the Arab world. M. Balafirej replied that no change in the status of Tangier would be contemplated without the cooperation of the

interested powers. Tangier's special status would always be honoured. This was confirmed by the Fedala Conference last October. But it may well be that Western businessmen will require better proof that the Arab's deed is as good as his word. Of this the Moroccan Government seems well aware.

Tangier's basic population is made up of Arabs, Spaniards and Jews. To the traveller's eye Arab and Jew are often indistinguishable, so successfully have the latter been integrated. Of course Nasser's influence has begun to undermine this harmony. When I was in Tangier the Petit Socco, which, as a source of every rumour in the city, is known irreverently as Radio Socco, buzzed with the news of an anti-Semitic bomb-outrage in the Jewish Cemetery off the Rue de Portugal. However, investigations by the police showed that it was merely an old shell from World War I that had been there for many years and which had exploded as a result of the decomposition of its charge. People in Tangier laughed with relief. But it was a nervous laugh. Already Jews are leaving Morocco for Israel, because, as one of them in a transit camp in Gibraltar told me: "We have been through all this before. We will not be caught again." It would be a tragedy if Cairo Radio were to destroy the old tradition of Moroccan tolerance of the Jewish communities.

To the Arab in Tangier Nasser is just as much a hero as he is in the Middle East. One foreign resident sneered at his prestige. "When Farouk was King of Egypt he was the great man as far as the Arabs were concerned. Then it was Neguib. Now it's Nasser. Soon, no doubt, it will be someone else." But the influence of Egypt through her radio, as a cultural leader and as a centre of nationalism, is immense. Only Baghdad could effectively rival it.

"Don't talk to the Moors about Nasser," an English resident warned me. "They're liable to turn nasty." Nevertheless I did, and found them quite willing to listen to opposing views. Though most of them were adamant, almost blind, in their support of Egypt against the West, several declared: "Of course it hasn't been the same since the French left Morocco; work becomes more and more difficult to find."

The most popular man in Tangier is not Nasser but the Sultan. He is the head of their nationalist aspirations, and also the restraining influence. His portrait is sold in every shop and carried in every wallet. Once, when I was taking a photograph of a Moor,

(Right) *The Italian Church, in the suburb of Hasnona. The suburbs of Tangier, with their fine churches and their blocks of modern flats (below), seem more remote from the Arab world on which they fringe than do many of the cities of Southern Spain. The various foreign communities which live in these suburbs have created a little Europe, a small retreat where they can forget that they have ever left their homeland. Yet North Africa persists: the peasants passing along the modern thoroughfares, the Arab goat-boy grazing his herd outside the most luxurious of Tangier's villas, the blinding Mediterranean sun and the flashing white of the Arabs' cloaks declare that Tangier is Africa, not Europe*



a large, opulent middle-class Arab rushed up and stopped me. I could not gather the reason for his action but in the course of a heated conversation he produced a photograph of the Sultan, and pointing to the subject of my photo said fiercely: "We are Arabs. You are English man. Go away." The Arabs in Tangier were particularly sensitive to being photographed. Indeed it was only when I had my camera that I experienced any difficulty with them.

On all other occasions they were extremely friendly, especially when they were trying to sell goods or vice. Economic necessity overrode what nationalist sentiments they had. With acute Arab business acumen they knew where their true interests lay.

A large proportion of the Spanish community live side by side with the Arabs, in the twisting streets of the Kasbah or in the narrow alleys of the Socco. At present the Arabs are very fond of the Spaniards.

"General Franco is a good man. He gave Morocco independence. He likes Arabs," one youth assured me.

Likewise the Spaniards pose as the friends of the Arabs, as the one European nation that really understands them. History is, of course, on their side. But feelings are probably deeper than this. One day I promised an Arab friend to see if there was a room in my hotel for him. It was a cheap Spanish hotel by the sea-front. I asked the proprietor if he had a room, and he was just about to reply "Yes", when I told him that it was for an Arab. "No Arabs. We won't have them. They're dirty and you can't trust them." The next day, strangely enough, I had to leave the hotel because of bed-bugs.

The international community is a heterogeneous collection of international financiers, businessmen, retired colonels, autocrats from Central Europe, political refugees, retired missionaries, novelists and artists. They live in the smart apartments of Tangier's European Quarter, or in suburbs like California or the aristocratic "Mountain". Life in these suburbs is much as it is in Hendon or the XVI^e arrondissement of Paris. Villas of the kind advertised as "kozy palaces" in English suburbs before the war contrast radically with the squalid *bidonvilles* beneath the Administration building, or the small stone huts of the Arabs from the Rif hills. Not only the Europeans live in style; many of the Arabs are extremely rich, and the Mendoub, just before his appointment was terminated, was building himself an ostentatious, ugly palace on the Mountain that made a more effective

comparison with the bidonvilles than do the late Victorian villas that stand around it.

The most interesting community in Tangier is its Bohemian floating population of tourists, passing residents, artists, racketeers, smugglers, touts and drug-addicts.

Tangier was the ideal refuge for those who came into conflict with the stricter legal or moral codes of their own countries. Indeed it very nearly satisfied the Rabelaisian definition of Utopia as "a place where every desire meets with its instant satisfaction". The absence of most moral standards, the jettisoning of the accepted moral codes of the various countries participating in the Zone's government, lent a peculiar atmosphere to Tangier. Life seemed semi-real. It was disconcerting to be told by a new acquaintance that he took morphine or was a smuggler by profession. For once I felt I was seeing people as they really were instead of the façade that social and moral conventions demand they prepare for the outside world.

A Canadian offered a sincere justification of this aspect of Tangier. "You know, Tangier's what you might call a psychological paradise. People come here neurotic and tiresome, full of their own personal problems. When they find that no-one cares tuppence for their own pet failing or perversion, they cease to worry about it, and they soon settle down as happy, likeable human beings."

It is easy to forget that Tangier is not only a city but a zone of Morocco many square miles in area. Tangier the city necessarily dominates one's thoughts and one's time. And yet beyond the small bay of Tangier rise the dramatic foothills of the Rif mountains, and the road climbs over the Mountain to Cape Spartel, the north-west point of Africa. Here, in the barren hills patchworked by deep, green forests, plots of reddish earth and small peasant villages, one is in North Africa, away from the brash cosmopolitan atmosphere of the city. Donkeys, laden with faggots and sacks of vegetables, trundle along, whilst peasant women in scarlet-and-white striped skirts and cartwheel hats hobble along behind them. At Cape Spartel a gleaming lighthouse flashes to the ships at sea, and if you stand beside its flower-filled gardens and look out to sea you can see both the Mediterranean and the Atlantic. But it is impossible to tell where the one begins and the other ends. Indeed it is as though the two great seas have washed up the polyglot inhabitants of their shores into Tangier, and fused them as successfully as they themselves are fused before your eyes.

St George at Chermignon

by MARIE-THÉRÈSE AND ASTRID ULLENS DE SCHOOTEN



An Kadachonnes. Marie-Thérèse Ullens de Schooten

Above: The Rhône traverses the Canton of Valais. Dominating the valley from a mountain-flank, opposite the picturesque Val d'Anniviers and one of the most beautiful ranges of the Pennine Alps, is the modern church of Chermignon, built on a rocky peak 4000 feet up at the edge of the village

St George in Switzerland, attired in Napoleonic uniform? To Englishmen, accustomed to think of him as their patron saint, this must indeed seem in the most literal sense a travesty. Yet he is as much revered in the Valais as in England and when his flag flies over our churches on April 23 we may take pleasure in remembering a remote Alpine village with which we share the celebration

Nor far from the well-known resorts of Montana and Crans-sur-Sierre, and quite near the latter, Chermignon, at an altitude of 4000 feet, dominates the Rhône valley. There, each year on April 23, the villagers celebrate with great ceremony the feast of St George, the patron saint of the parish. The origin of St George is Oriental. Did that fabulous person, that saint, ever really exist? He is said to have been a soldier and, having come from the East, to have vanquished a dragon who, in true dragon style, was preparing to devour a beautiful princess. By this heroic deed St George has become for Christian people the symbol of the strife between good and evil. According to the version of the legend current in the district, St George is said also to have belonged to the

Roman legion massacred near St Maurice in the valley of the Rhône.

This celebration is not only a patron saint's day; in the 17th century it took on a special significance. An epidemic of the plague had ravaged the district. The "Bourgeoisie" of Chermignon, set up by an assembly of all the citizens, decided to offer on that day to all comers, including strangers, at a place called the "Croix des Girettes", the two staple foods of the district: bread and cheese. After the wars which devastated and impoverished the district the distribution of cheese was given up, but that of bread is still ceremonially carried out.

From the most ancient times the distribution of bread has been the token of hospitality. At Chermignon it is also carried out on other



St George is the patron saint of Chermignon and the villagers celebrate his day in suitable style. Dressed in their best, they collect before the church. (Above) Girls, in traditional Valais costume, line up behind their standard. (Below) The procession begins to move off towards the village





(Above) *Preceded by the bands, the pride of the villagers, the procession winds its way past old wooden houses, some of them decorated with carvings. (Below) Dignitaries, both lay and ecclesiastical, assemble in front of the Maison Communale, to the rolling of drums and the sound of trumpets*





The only horseman in the procession is the man representing St George. At its head he leads the villagers by a narrow track along the hillside to a place called the "Croix des Girettes" where an important part of the ceremony, the distribution of bread, takes place. St George's costume varies from year to year, but it is always of the Napoleonic period

occasions and in other circumstances. It is customary at funerals to offer bread to the relatives and friends who are present, and who have often come long distances and by precarious forms of transport. But this custom is tending to disappear. Elsewhere it is becoming more and more uncommon.

The Rhône has its source in the glacier which bears its name and crosses the Canton of Valais before flowing through Lake Lemman. The valley through which it runs is important

because of its strategic position, and was colonized by the Romans who could reach it only by the Simplon and Great St Bernard Passes. The Romans introduced the cultivation of many fruit-trees and also the vine. These were originally products of Asia and had been introduced into Europe by the Greeks. The Canton of Valais is still considered the greatest producer of fruit in Switzerland and its wines are famous.

The Valais is on the principal route between Italy and France, but during the long winter months its only communication with its neighbours was by way of the St Maurice Pass, which leads to the Canton of Vaud. Because of this the Valais remained poor until fairly recent times. But now it has become prosperous owing to the improvements in the international roads leading to Italy, the boring of the Simplon tunnel, the building of numerous dams, the much greater production of electricity and the consequent greatly intensified industrialization. A road, opened up only a few years ago, now connects Chermignon with the valley and, higher up on the plateau, with the resort of Crans.

Having been on the fringe of the world for centuries, Chermignon has kept its special characteristics: wooden houses with small windows, roofed with stone slabs. The people still work in their fields and mountain-pastures and in the vineyards which flourish on the sunny slopes near the river. But

they have now found more remunerative employment, for the popular resorts are constantly developing. Hotels and chalets are multiplying, workers are in steady demand, and numerous young golf caddies are proud of contributing to the family budget during the summer holidays. The village faces south and looks onto the narrow, winding Val d'Anniviers. It enjoys a marvellous mountain climate. In winter the ski-ing season and in summer the golf enthusiasts, who love the

magnificent Alpine turf, add to the inhabitants' relative but ever-increasing wealth.

But if the village people incline to modernity and progress, they remain as faithful as ever to their ancient customs and traditions.

The Canton of Valais was one of the last to join the Swiss Confederation, in 1815. The village of Chermignon, like all the other Swiss communities, is administered by two bodies. One, the Citizens' Assembly or Bourgeoisie, headed by a President, is composed of all those who were born in the district and have acquired rights over the common property, vines, pasture-grounds or forests. The profits derived from these properties are shared out yearly among the citizens. This is a very old institution. In the village of Chermignon d'en Bas which, as its name indicates, is situated below the village of Chermignon and is partly under its administration, the Bourgeoisie have kept their self-government and their archaic names whose origin goes back to the Middle Ages. The President calls himself the "charge-ayan", and the members call themselves the "frères communiers". Every Swiss citizen living in the community can get himself elected to the second assembly or Assemblée Municipale.

The new road and the general prosperity have enabled the village to expand. A church of vast proportions now replaces the ancient chapel. It was planned by a famous architect, who has built several others in this Catholic and profoundly religious region. Its construction was due to the devotion of the inhabitants and to the enthusiasm of the young and energetic priest. It dominates the whole district. Very modern in style, it is inspired by the tradition of the Romanesque churches in the north of Italy. It is built of concrete faced with stone and is flanked by a high bell-tower with a forecourt in front, from which there is a view that includes all the Alps from the Simplon to the range of Mont Blanc. A baptistry of

smaller size, in shape somewhat like the choir, faces the entrance to the church.

I had spent several years in the country and had often heard how picturesque the St George's Day ceremony was, so my daughter and I decided to be present at it.

In the morning we went down to the village to hear High Mass, admiring on the way and across the valley the snow-covered peaks and the great glaciers of the Rothorn de Zinal and of the Weisshorn. Alas, in this land of sunshine, where the sun has become a symbol of the region, the weather that day was dull and

The escort of St George, his guard of honour, follows him. It is composed of a group of young men—their faces sunburnt from their mountain life in the open—who are also dressed in uniforms of the same period, carefully kept for the great day







(Opposite) *At the Croix des Girettes the curé of Chermignon preaches to his flock, briefly explaining the venerable origins of this ceremony of the distribution of the loaves of bread, which have been brought in big baskets. St George's standard is the one nearest to the camera.*
 (Above) *A little way off St George and his companions take the opportunity to rest for a moment*

overcast. Perhaps it was to console us that people told us that those grey skies, that persistent fine rain, those clouds coming down from the mountain-tops as if sucked in by the valley, were traditional on St George's Day.

During the week, in daytime, the village seems as if asleep, for everyone is busy: some have gone down into the valley by the steep paths to weed or prune the vines; others are working in the fields and, except when the postal van comes, the village seems deserted save for a few old women.

But that morning the village was humming with excitement; everyone was hurrying towards the church. In the outer sanctuary musical instruments were lying abandoned. They belonged to the bands of two rival political groups, the Whites and the Yellows, and could be recognized by their respective metals—brass and nickel. The bells in the new tower rang a full peal, and the roof re-echoed to the music of the organ, for nothing had been spared to make the church a monument to the glory of God.

Then the congregation went up again to the Maison de la Bourgeoisie, or Maison

Communale. There, in the lofty panelled hall, the notabilities assembled for a banquet: town councillors, important people of all types, both lay and ecclesiastical. The banquet was of the traditional kind. While awaiting the main dish, the guests, to allay both their impatience and their hunger, began by eating thin slices of meat dried in winter by the east wind. This is a speciality of the Valais, and is served with onions and pickles. Meantime, before charcoal fires or electric cookers, the *raclette* was being prepared. The local cheese melted in front of the fire is quickly handed to the guests and, before it has time to get cold, the upper layer, soft and savoury, is scraped onto a plate. Solid and nourishing though this dish may be, those who are fond of it manage to eat astonishing quantities (a pound is allowed for each guest), and wash it down with many glasses of the white wine of the district. For under the hall of the Maison Bourgeoise is the cellar where are kept the communal wines, carefully guarded and looked after, which are destined to be consumed by the Bourgeois of the village.



Back at Chermignon the procession disperses and now comes the moment for traditional jollifications. Above) The guardian of the civic cellar pours the communal wine from a tin vessel called a "channe". Below) No persuasion is needed! The contents of wooden goblets are gratefully poured down dry throats



At the end of the banquet those who are to take part in the procession meet in the outer sanctuary of the church in readiness to set off. This procession has something of a military appearance. Paradoxically, the local people, forgetful of the suffering and misery inflicted on their canton by the campaigns of Napoleon, have idealized his memory and made a demigod of him. That is why St George wears a Napoleonic army uniform for the occasion. The uniform (like the person who represents St George) changes from year to year but is always of the same period. The inhabitants of Chermignon have kept their liking for military displays. Many among them have a rank in one regiment or another. Uniforms, piously taken care of, will serve today to clothe the children who, walking in step and keeping their places, will follow the saint. The latter will also have his guard of honour, clad, like himself, in uniforms of the Empire.

I got back to the square at the moment when the guests had finished their banquet and were preparing to receive St George.

The first to appear along the winding road were the rival bands, preceded by their standards, and with these came men bearing immense bulls' horns, decorated with flowers. Groups of young girls came next, followed in turn by the saint's escort, and by the procession of young boys dressed up as soldiers.

St George alighted from his horse to salute the important dignitaries, then remounted and took his place at the head of the procession. He went in the direction of the Croix des Girettes, the traditional site for the blessing of the loaves.

At the double and followed by my daughter, I hurried down a narrow street to get ahead of the procession and secure a photograph of it silhouetted against the valley. Near the Cross, the *curé*, wearing his surplice, and the sacristan, carrying the holy water, waited for the procession. The crowd formed up respectfully at the foot of the slope to listen to the words of their priest. He recalled the origin of this pious foundation and exhorted them to remember the spirit that had inspired it, a spirit symbolizing hospitality and charity.

I went off by myself to look for some new point of view to photograph. Some distance away the members of the rival bands, now amicably reunited, were stretched out in a meadow. They were resting after their labours and the effects of the many glasses of wine they had poured down their dry throats. A little farther away, St George and his companions were seated unceremoniously on a fence, waiting stolidly for the sermon to end.

Then the priest took the holy-water sprinkler and blessed the loaves of bread that had been placed at his feet in large baskets. These rye loaves, black and hard, can be kept for a long time. People who like them claim that they improve with age. As soon as they were blessed the loaves were handed round. A whole one was offered to the notabilities present, in token of their authority. The other loaves, cut in quarters, were afterwards distributed among the crowd.

St George resumed his dignity and his rôle; the bands picked up their instruments; the escort lined up; and, to the accompaniment of martial music, the procession turned back. Then, having reached their starting point, and the religious aspect of the festival being over, the procession broke up. But most of those present stayed where they were, for, their duty done, it was now time for relaxation and popular rejoicing. The doors of the cellar were opened and the official, who was its guardian and the dispenser, began to serve everyone with wine which he poured out endlessly from a large tin vessel called a "*channe*". From a balcony I watched the wine-drinking, which only made the company more friendly and gay.

They immediately signed to me to come down, and I found my daughter among the friends we had made that day. The President of the Bourgeoisie who was welcoming people at the threshold of the cellar invited me to visit it with him, an honour from which women are normally excluded. I inspected the store-room and the wine-press, but in the cellar itself I particularly admired the great barrels, the three immense casks made of local mountain-pine in which the supply of communal wine is kept. At the President's request the guardian let us taste the produce of the different vineyards. Then, filling his own mug, he took it back with him to the square.

One by one or in little groups the women went home, stopping for a few moments at the cemetery, uniting by their thoughts both the living and the dead. When they reached their homes they prepared the evening meal and welcomed their children, tired out after their long day.

The young people and the men in the square or in the narrow streets continued their animated conversation, their vehement but amicable political discussions.

For some time now, in the twilight, the rosy hue had been fading from the peaks. The long shadows of night were coming up from the valley, and my daughter and I took the path to our house in the mountains.

North America's Distant Early Warning Line

by C. J. MARSHALL

Although the DEW Line is being built and financed by the United States, most of it is located in Canada and the Canadian Government has maintained a continuous interest in its development. As an officer in the Department of Northern Affairs and National Resources the author represented Canada on the DEW Line Site Survey Team in 1955 and has since visited the line several times

FOR most readers outside North America the words "DEW Line" probably have little meaning; but in Canada and the United States they conjure up an Arctic project that grips the imagination even in an era when much thought and attention is being focused on the North.

I was fortunate enough to be associated with the line from its early days but I am still amazed by the scale of the operation. Stretching for 2500 miles across the Arctic, it required the biggest task-force of ships since the invasion of Europe and the largest air operation since the Berlin airlift to take in the supplies; while more than 7000 men laboured through two short Arctic construction seasons to complete the work on schedule. Small wonder that many consider the project one of the most dramatic engineering achievements of our time and a milestone in the development of the Arctic.

For the average North American, the most significant military development since World War II has been the evolution of the long-range bomber. In the past, distance was an effective shield, but by 1950 it became generally accepted that Canadian and American cities would be open to air attack if war broke out. Most Europeans had long since learned to live with this concept, but in North America it was new and startling—particularly since the next bombs would probably be of a thermo-nuclear variety. Considerable thought was naturally given to possible defensive measures and since the most obvious danger was a surprise attack over the empty Arctic wastes, it was decided to build a radar network across the north of the continent.

The first of the "early warning lines" was known by the code name Pinetree and ran roughly along the Canadian-United States border. Built and manned jointly by the two countries, it went into operation in 1954, and was expected to give major centres up

to one hour's notice of attack. Such warning was not sufficient, however, to ensure that modern bombers could be dealt with before they reached their targets; and it was agreed that the network should be extended by two additional lines farther north. One of these, the Mid-Canada Line, was to follow the 55th parallel while the other, the Distant Early Warning or DEW Line, was to be built on the most northerly route practicable. This proved to be along the Arctic coast from the vicinity of Point Barrow, Alaska, to the east coast of Baffin Island. The completed radar system was designed to give from four to six hours' warning.

Canada agreed to build and man the Mid-Canada Line, which is also known as the McGill Fence because the electronic equipment was developed at McGill University in Montreal. The United States, with its greater resources, accepted responsibility for the more difficult and expensive DEW Line.

The question whether the early warning network will be of any real value in case of attack has been hotly debated. Some critics have likened it to the Great Wall of China or the Maginot Line. They claim that an aggressor resourceful enough to mount an attack on North America would find a way of exploiting one or more of the system's weaknesses. Others have suggested that, even as it is being completed, the network is becoming obsolete because it was not designed to deal with inter-continental ballistic missiles. Those who defend the lines claim that once the stations have been established, the detection equipment can always be improved. They also point out that some warning system, however imperfect, is better than none. Whatever the military value of the network may be, there is no doubt that the construction of its northern element, the DEW Line, is a dramatic engineering achievement; and because of it, life in the

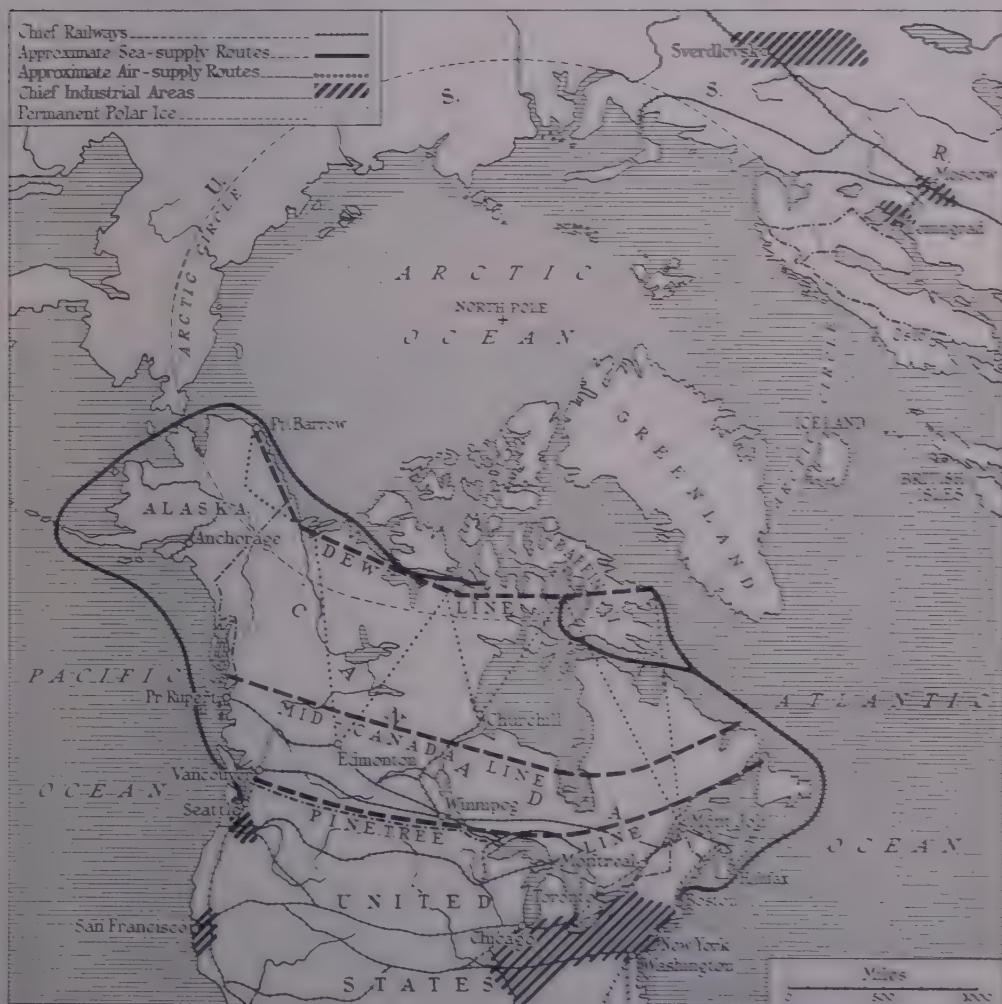
Canadian Arctic will never be the same again.

Since the greater part of the DEW Line was to be located in Canada the Canadian Government maintained a close and continuous watch over it from the earliest stages. The agreement between Canada and the United States authorizing the construction of the line contained clauses dealing with the welfare of the Eskimos, the protection of game, and similar matters. As soon as work got under way Royal Canadian Mounted Police constables and Northern Service Officers were stationed at a number of points to ensure that these regulations were followed. As a result almost none of the situations usually associated with an operation of this type occurred.

Because it was to be located as far north

as possible, the builders of the DEW Line were faced with an imposing array of problems. The natural hazards included difficult, inaccessible country and one of the most severe climates in the world. The route stretches for approximately 2500 miles across terrain ranging from flat tundra in the east to rugged 7000-foot mountains in the west. Edmonton, the nearest city of any size, is 1000 miles to the south and many parts of the region have no transportation facilities of any kind. Added to this is the cold. Temperatures during the short summer seldom rise above 60°F and they can hover at -40°F for weeks at a time during the long winter.

Man-made difficulties aggravated the natural problems. Once the military planners decided that the DEW Line was neces-





All photographs, except four, from the author

The DEW Line, North America's most northerly radar warning system, was supplied by "the biggest task-force of ships since the invasion of Europe". Above, Ships of the U.S. Navy bringing equipment for a site in the eastern sector. Below, A Canadian naval ice-breaker ploughing a way, at full power





By courtesy of the Western Electric Company, Inc.

(Above) A convoy of L.S.T.s being unloaded directly onto the beach in the western part of America's Arctic coast. Approximately 250,000 tons of supplies were brought by sea to all sites in the short Arctic shipping season of 1955. (Below) A portable rock-crusher being unloaded from landing-craft



sary they wanted it in a hurry. Just a little more than two years were allowed for the completion of the project in a region where the construction season is seldom more than four months long and shipping is restricted to a few weeks. The fact that the task is being completed on schedule is due in part to the skill and determination of the builders and in part to their ignorance of the difficulties they were to encounter. If the problems had been fully appreciated in the beginning, the job might never have been undertaken.

Although the DEW Line is a military project and is being financed by the United States Air Force, the construction is being handled by civilians. The Air Force awarded the contract for building and equipping the line to the Western Electric Company of New York. The latter divided the line into three sectors and sub-contracted the actual construction work to one United States and two Canadian firms. The official estimate of the

cost is something over \$400,000,000.

The line will be made up of three different types of stations: main, auxiliary and intermediate. The main stations will be the focal points for supply and communications and together with the auxiliary stations will be equipped with scanning radar which can search out and track an aircraft. The intermediate stations will have only warning devices and will serve as "gap-fillers". Once built, the line will be operated and supplied by a civilian contractor. The Air Force's responsibility will be limited to supervision and control of the project.

The final decision to construct the DEW Line was not made until late in 1954 and it was early in the spring of 1955 before work on the ground could get under way. It was probably inevitable that there would be considerable confusion in a project of this magnitude and complexity, particularly when it had to be carried out at breakneck speed.

After being transported to the Arctic by sea and air, prefabricated building-units ("modules") and other materials were hauled to some of the sites by "cat-trains", tractor-drawn freight sledges

courtesy of the Western Electric Company, Inc.





By courtesy of the Western Electric Company, Inc.

(Above) "The largest air operation since the Berlin airlift" brought 50,000 tons of material to the DEW Line sites in 1955 alone, as well as many of the 7000 men employed on the construction programme.

(Below) In good weather camps bustled with activity. This one will become a permanent radar-station





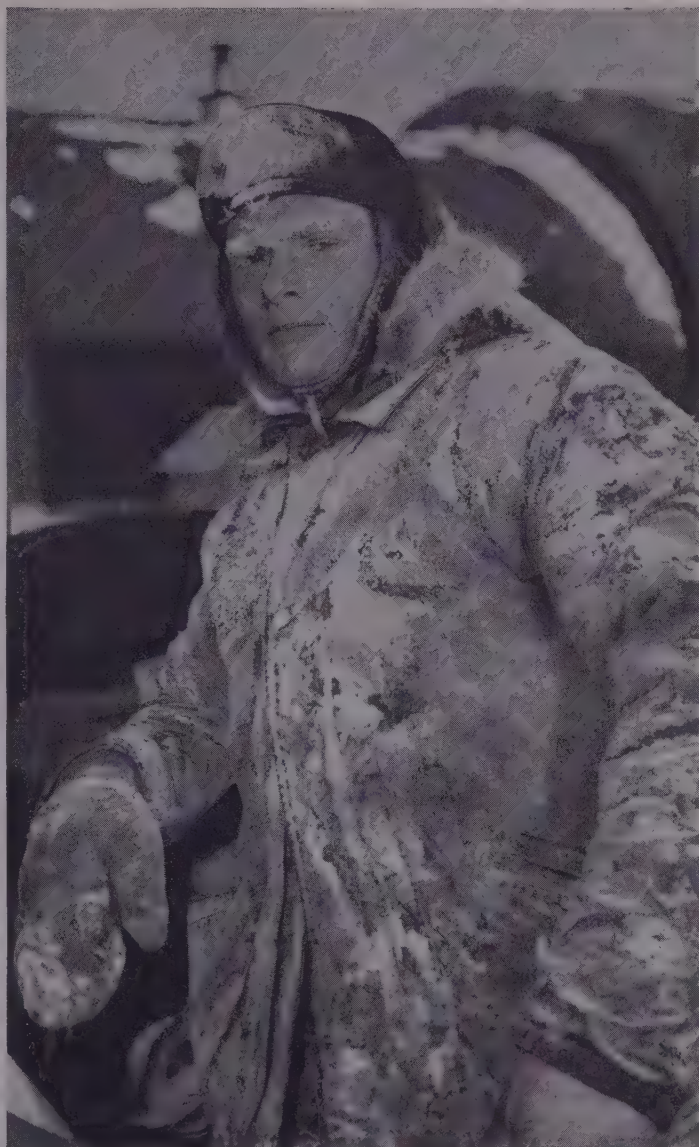
(Above) Driving a tractor in the Arctic winter was considered to be one of the toughest jobs in the construction of the DEW Line. As windshields or a cab restricted their vision workmen preferred to brave biting winds and snow. (Below) Pneumatic drills were needed to penetrate the frozen ground before the work of building began. The huts in the background are living-quarters for construction personnel



Certainly the difficulties that were encountered in the early stages made some observers doubt that the work would ever be completed, let alone on time. There were three distinct phases to the project: surveying the sites, delivering men and supplies, and the actual construction of the stations. Normally these steps should have followed one another in that order, but with the necessity for speed the various phases were often carried out simultaneously; sometimes even the order was reversed.

While the site-survey teams worked at a feverish pace during the spring of 1955 to locate the stations, the construction companies, to save time, often began setting up camps at the sites they expected would finally be chosen. Now and then they guessed incorrectly. At one site I remember watching the weary and disgruntled members of a pioneer construction crew laboriously moving their tents, supplies and equipment across the five miles which separated their camp from the site eventually chosen for the station.

The greatest hardships were experienced in this early period while the sites were being located and the construction camps established. Few of the sites were near any kind of settlement and the first arrivals found nothing but ice, snow and bare rock. As one workman expressed it: "The aircraft took off and all of a sudden there we were standing in the middle of nowhere with our teeth chattering from the cold." Everyone lived in tents, which are not ideal accommodation for sub-zero temperatures; and clothing, often improvised in the rush, was sometimes inadequate. Even under the best of conditions, men do not work efficiently in the Arctic since much of their energy is expended in keeping alive. A simple task like putting up a tent or driving a nail becomes a difficult operation at -30°F and exposure of an hour or two is usually all that a man can take at



After riding on a tractor-drawn sleigh this DEW Line workman resembled a snowman. Construction personnel came from all parts of Canada and although few had been in the Arctic before most of them quickly adapted themselves to northern conditions

one time.

Despite the difficulties of the cold, it is now an accepted principle in Canada that distance rather than climate is the main barrier to the development of the Arctic. It is perhaps natural therefore that the solution of the DEW Line's transportation problems was the most dramatic phase of the entire project. Overland transportation was prac-



An aerial view of one of the DEW Line radar warning stations. A "radome" dominates the centre of the photograph, which shows how the "module" units, comprising the station buildings are assembled. The edge of the frozen sea, open briefly to shipping in the summer, can be seen in the distance

travels out of the question since there were no roads and the nearest railhead was more than eight hundred miles to the south. In the west, some material was moved laterally along the line by tractor and sled when conditions were suitable, but the main problem was to get the supplies up to the line. Sea transport played a vital role for it carried the bulk of the material, but with a shipping season limited to three or four weeks near the end of the construction period, something more was required. Aircraft provided the answer and the greatest air operation since the Berlin airlift was the result. In 1953 alone, 3,000 tons of material were airlifted to the various sites, and by the time the first ships arrived early in August of that year,

construction was well under way at most of the stations.

Commercial air-carriers and the United States Air Force shared the airlift, with the latter concentrating primarily on the 'out-size' items. For the commercial operators it was a field-day and every available aircraft was used. At one site I saw a single-engined Junkers of 1931 vintage and, at another, a Dakota which had just been brought in from Central America and still had its Spanish markings. Several hundred aircraft of all types and sizes were employed and in the first five months of the project almost 3000 flights were carried out.

Like the aircraft, the pilots were a heterogeneous lot from many parts of North America

(Right) Test communication antennae such as this rise above the buildings of the DEW Line stations that guard North America from surprise attacks by long-range bombers. Efficient communications are essential if information picked up by radar is to be passed quickly to control centres. (Below) Igloos with a difference! These strange plastic spheres known as "radomes" are used to protect radar equipment from the elements



and Europe. They included soldiers of fortune like the famous Whitey Dahl, seasoned veterans of the Dienbienphu airlift and young journeyman pilots earning their first flying-pay. Most had one thing in common, however—almost complete ignorance of Arctic flying conditions.

These conditions were formidable. Snow, sleet and sub-zero temperatures could be expected at nearly any time. There were no navigation-aids, few radio-communications, and next to no suitable maps. Servicing facilities were practically non-existent, and trying to work on an aircraft engine in the Arctic winter can bring tears to the hardest man's eyes. The biggest single problem, however, was the complete lack of landing-facilities at any of the sites. The programme called for airstrips to be constructed along with the stations; but how could the work be started until men and material could be landed?

Various methods were used in an effort to get on with the job. Usually a ski-equipped Dakota landed as close to the site as possible with a few men and perhaps a small piece of mechanical equipment. They cleared a strip on the flat sea-ice where larger wheeled aircraft could land, bringing more men and larger pieces of equipment. However, landing a ski-equipped aircraft on unknown terrain is never easy and sometimes impossible. At one point in the eastern sector of the line the first landings had to be made on a lake thirty miles from the site. At other sites, multi-engined aircraft could not land at all and the problem was how to get mechanical equipment onto the ground.

The United States Air Force's solution showed typical American ingenuity: they dropped the tractors by parachute. The first step was to get them out of the aircraft. This was done by starting the engine, putting it in low gear and letting it drive itself out of the door. The second step was to get the tractor safely to the ground. Up to six parachutes were used for the fourteen-ton machines that were dropped but the technique was not perfected immediately. On more than one occasion something went wrong and the tractor went crashing through the ice. Such was the importance of getting on with the job, however, that, if the first or second machine did not land safely, it was simply a matter of trying a third.

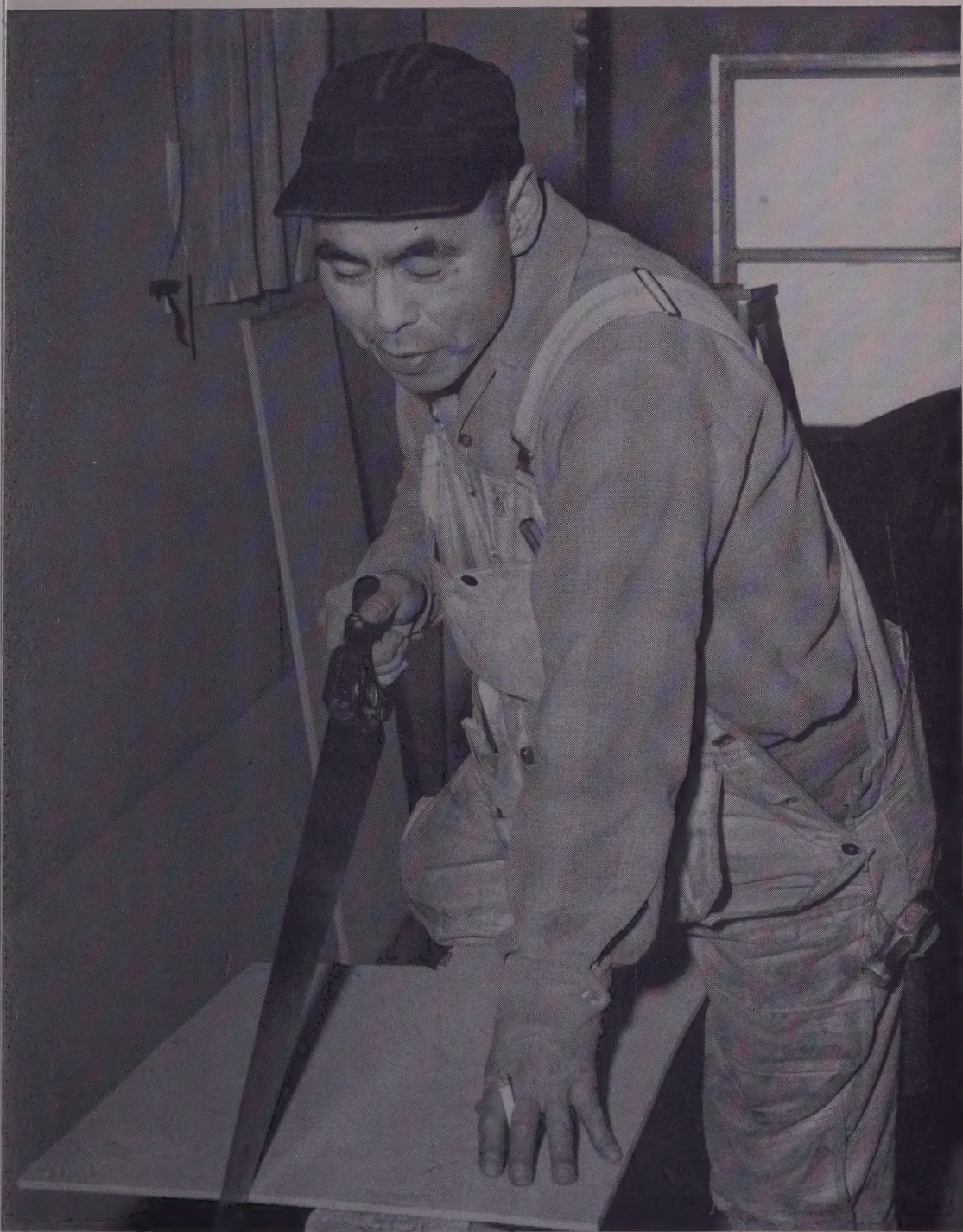
The bulk of the supplies and equipment was brought to the sites by sea during the very short shipping-season. Here, too, it was a matter of proceeding by trial and error in

the early stages. Ice and fog were problems and for many regions there was no hydrographic information. To transport almost a quarter of a million tons of material under these conditions, the United States Navy mobilized the greatest task-force since the invasion of Europe. The fleet which supplied the western portion of the line consisted of 57 ships and 15,000 men in 1955. With a combination of good luck and good seamanship they carried out their task of landing 120,000 tons of material at the various sites in the western and central sectors of the line, but ice-conditions that year were exceptionally difficult and the cost was high. Only four of the 57 ships escaped some kind of damage and at the end of the operation it was estimated that the repair bill would run to more than \$50,000,000.

All the latest marine techniques, including the use of frogmen for gathering information on beach-conditions, were employed during the sea-lift. On one occasion, however, the frogmen ran into an unexpected hazard. In the distance some Eskimo hunters saw two of them climbing out of the water onto a cake of ice, mistook them for seals, and nearly shot them for dinner.

Once men and equipment had been landed at the sites, many, but by no means all, of the problems had been solved. The buildings themselves were simple enough but a large number of the sites were fraught with difficulties. They were chosen to meet electronic requirements which demanded that the stations be at specific intervals with the radar equipment located on the highest point of land. Such features as the topography and the nature of the soil, the availability of gravel and access to the sea received only secondary consideration. Often it was necessary to locate the buildings on an inaccessible hill or cliff while the roads and airstrips had to be blasted out of the rock or built across permafrost (perennially frozen ground). It has been estimated that the gravel used for roads, airstrips and building-pads would be sufficient for a highway, 18 feet wide by 1 foot thick, from Toronto to Vancouver, a distance by road of about 3000 miles.

The most striking feature of the completed stations will be the "radomes" which house the radar equipment. These incongruous plastic spheres set on squat steel towers are already becoming as familiar to northern travellers as the Hudson's Bay Company's trading-posts or Eskimo snow-houses. The remainder of the station buildings are of a simple design and consist principally of pre-



Eskimos have always been noted for their manual skill and more than 250 of them have found employment on the DEW Line. With their population increasing and game resources in the Arctic dwindling, such work may provide a useful alternative to the traditional Eskimo occupations of hunting and trapping

fabricated 16-foot by 28-foot units called "modules". From a distance the modules look remarkably like railway box-cars and the completed stations have become known as "building-trains". In fact, one workman described a main station as "a whole darn freight-yard".

Like everyone else connected with the DEW Line, the construction workers were a mixed group gathered from here, there and everywhere in the rush to get on with the task. Apart from the U.S. electronics specialists, most of the workmen in Canada were Canadians—English-speaking from Edmonton and Vancouver, and French-speaking from Montreal. There were even 250 Eskimos, most of whom were working at wage-employment for the first time in their lives. Some of the white men were attracted by an urge to sample life in the Arctic, and others by the opportunity to save some money away from the distractions and temptations of civilization. At the peak of the construction programme there were 7281 workmen spread along the line.

Boredom will probably be one of the chief hazards once the DEW Line is in operation, but this was not the case during the construction phase. Life in the camps was necessarily simple and there were few diversions because hard liquor was banned by the companies and the Canadian Government had introduced strict regulations limiting the number and use of firearms, to ensure that game was not molested. The lack of diversions did not really matter, however, because a man who works a 65-hour week in northern conditions has little time or energy left for anything but eating and sleeping.

The food was always excellent. Once when I was travelling along the line with an inspection-party we arrived at an isolated survey-camp just at lunch-time. The cook asked us whether we would like chicken or steak and thinking he was joking we asked for some of each. To our amazement we were served generous helpings of both.

With a short construction-season and an almost impossible deadline to meet, time was a vital factor but haste did not always make for speed. Some of the miscalculations made under the pressure of the moment are amusing in retrospect although they probably seemed disastrous at the time. At one site in the western Arctic, located on a low-lying beach, the work on the station was just being completed when an unexpectedly heavy storm blew up and washed most of it away. At

another point an airstrip was constructed with considerable difficulty only to have the discovery made that it was too close to the buildings. A second one had to be built 500 yards away. Despite all difficulties, however, the work is on schedule and is now nearing completion.

The question whether the DEW Line will serve any useful military purpose has still to be answered, but there is no doubt that it will have a profound and lasting effect on the Arctic. The main impact will be felt through improved transportation-facilities. To this practically inaccessible area it is bringing dozens of new airfields, regular aircraft service, and vastly improved water-transport. These facilities will make fresh food, mail, and regular changes of personnel everyday phenomena. They will also mean that teachers, doctors, traders, missionaries and government administrators will be able to move with greater ease than was dreamed possible five years ago. They may even mean that minerals, the one natural resource that seems capable of development, will be exploited.

Inevitably, the lives of most of the Eskimos in the region will be drastically altered. To those who have led the dangerous and precarious existence of the hunter and trapper the DEW Line is bringing a life of routine and financial security. The natives are already capable of doing a number of jobs on the line and with training can learn to do many others. It has even been suggested that, if the line is to be operated for any length of time, the Eskimos could take over most of the work. This is an intriguing idea because the natives call this bleak and uninviting region "home" while most white men must be paid large salaries and provided with expensive services such as mail and fresh food before they can be induced to stay on the job for more than a year.

The DEW Line is accelerating this change in the Eskimos' way of life but it is not responsible for initiating it. For the past ten years increasing population and decreasing game-resources in the Arctic have forced a trend to greater and greater dependence on wage-employment. The new pattern of life will bring with it an era of material prosperity with both the benefits and the temptations that this implies. The adjustment will not be easy but with reasonable controls and guidance there is no reason why the DEW Line should not be a boon to the Arctic even if it does not prove to be a shield for the rest of North America.